Chemical Week

December 22, 1951 Price 35 cents

Defense boom poses materials, money, manpower problems; MCA forum seeks sound solutions . p. 7

Merry Christmas! CW round-up on bonus plans shows how tangibly employers are saying it . p. 10

Novel iodine compounds push into germicide fray; good bet: new applications, tonnage use . . . p. 19

U. S. war makers eye, evaluate Australian sugar cane wax process; key: chromic acid bleaching p. 23

Deeper oil wells, and more of them, spawn $1¼ billion "chemical mud" sales . . . . . p. 29

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Chemical Week

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PUBLISHER ..... Wallace F. Traendly
EDITORIAL DIRECTOR .... S. D. Kirkpatrick
EDITOR .....W. Alec Jordan
MANAGING EDITOR .. Howard C. E. Johnson
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OPINION . . . . . .

Resorcinol Outlook

To THE EDITOR: In your Dec. 8 issue you state that resorcinol is misclassified in the NPA Products List, intimating that resorcinol is in easy supply.

We wish to state that resorcinol is under complete allocation under Order M-45, Schedule 6 . . . that the current supply falls considerably short of meeting the current requirements.

We are at a loss as to the source of your information. . . . When plants now under construction are brought into production, resorcinol's position should ease; however, until these plants are in, we can see no easing of the situation.

L. A. SCHLUETER
Chief, Coal Tar Chemicals, Dyes & Intermediates Branch
Chemical Division
National Production Authority
Washington, D. C.

"Misclassified" was an ill-chosen word if it implied criticism of NPA rather than merely pointing up the difference of opinion—and a rugged difference—which sometimes exists between NPA and industry re what's short, what isn't. Industry men assure us that resorcinol demand lagged badly throughout October and November. (A similar difference of opinion about shortages exists, incidentally, in still-classified allethrin. See p. 4, Dec. 8).

The main basis for these variances is, we suspect, that NPA naturally takes the long view, can't take account of what may possibly be temporary let-ups in military needs.—ED.

Unionization Fracas

To THE EDITOR: . . . I think that CW's fat-salaried, well-fed, polo-playing editors should know about the "other half" and what it thinks of your report on chemical unionization "Progress and Paradox," (Nov 17) . . . Just so that you will get some idea I'm enclosing an editorial — which really takes you apart . . . from the December issue of the International Chemical Worker . . .

Chukkers up, old chaps, be sporting about this thing. Don't print my name . . . I shouldn't like to have my union card punched . . .

NAME WITHHELD

Highlights from the Union diatribe:

"CW generalized in its Nov. 17 issue . . . 'While chemical unionism has grown up physically it has a good way to go to catch up mentally. Management and labor meet across the table on virtually equal terms. Yet labor still thinks of management as it was back in the robber-baron days.'

"Evidently . . . impressions were gained . . . from observing the acts of other unions . . . or without making any really thorough observations at all.

"It takes mental maturity from the beginning to bring about subsequent physical growth . . . in any economic organization of lasting size and influence . . . CW has the proverbial cart pulling the horse . . .

"Chemical management and labor do not and never have met across the bargaining table 'on virtually equal terms' . . . Since when in this life are a 140-lb. five-footer and a 250-lb. six-footer 'on virtually equal terms' if it comes to analysis of strength . . . ?

"Thirdly, . . . President Bradley some years ago remarked: 'From here on in, the employer is the best friend we have.' He has repeatedly reiterated this stand . . . never misses an opportunity to tell of the progress that has been made toward better understanding . . . He has stressed . . . labor and management are partners, neither of whom can survive without the cooperation of the other.

"Excusable, understanding and amusing as this all is, there is nevertheless a danger in such writing in that it promotes the idea that some sort of 'class war' is going on within our industry. We're surprised at a publication of CW's stature allowing its pages to popularize such a theory."

CW is amazed, suggests that The International Chemical Worker played a rotten game of cricket in picking up one paragraph of CW's report, isolating it from context to pander to its readers. Neatly ignored and unquoted are some other CW statements:

(1) Re how some unions think of management, foment "class-war": A quote from another union paper which classifies quick amortizations as a "tax kickback" program so that Mr. and Mrs. Taxpayer foot the bill, give million dollar plants to industry, "which is supported by phony reasons . . . is more Big Business hogwash, dear reader."

(2) On Bradley: "His homespun earnestness has won him respect at the bargaining table. A pet subject is human relations—especially the need for joint union-management sponsorship of a program to educate workers to the ideals of capitalism and democracy."

(3) "Labor unions have come a long way from the violent dawn of trade unionism. Management has come a long way from its early, stiff-necked

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OPINION . . . . . .

attitude. Enlightened union and management representatives are . . . beginning to realize their vital interdependence."—ED.

Safe and Sane

TO THE EDITOR: I have read with considerable interest your article "White Christmas" (Nov. 10) . . . [which discussed the introduction of aerosol-plastic sprays to coat Christmas trees with "snow."]

I wonder if consideration has been given to the introduction of additional flammables to already serious Christmas tree fire hazard.

We are pioneering the effective flameproofing of Christmas trees and evergreens with our product Safe-Tree. . . . This was introduced last year . . . received widespread insurance and fire chief endorsement. Safe-Tree may be readily sprayed by hand . . . provides an answer for a safe and sane Christmas season.

B. J. TYLER
Director of Sales
Double B Products Co., Inc.
Hartford, Conn.

Yes, consideration was given to flammability (as distinct from flame-proofing). The aerosols, if formulated with recommended propellents are not flammable; the plastic coating is much less flammable than the tree. One feature Reader Tyler did not mention about his product: it binds needles, reduces needle dropping to about a tenth of normal.—ED.

Weekly Market Index

TO THE EDITOR: We are very much interested in your weekly Index of Chemical Output . . . and it would be most helpful if we could obtain . . . figures as far back as available.

EDWARD R. CAFFREY
E. I. DuPont de Nemours & Co.
Wilmington, Delaware

Thanks, Reader Caffrey, for your expression of interest. Unfortunately, we've only been publishing the index since we went weekly—last January 20th.—ED.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.
Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

NEWSLETTER

Last week will show up heavily in December expense accounts, for chemical men from all over the country converged on Chicago, Wilmington and New York for meetings of the Compressed Air & Gas Institute, Chemical Market Research Association, Society of Plastics Industry, and the Manufacturing Chemists Association (for more on the latter, see p. 7).

Obliquely confirmed by NPA's Osgood Tracy at the MCA meeting was CW's prediction (Newsletter, Dec. 15) that a sulfur limitation order would be issued shortly. He said he hoped "that Santa Claus would bring it."

After the industrialists depart, the Congressmen arrive. Now it looks as if the Delaney Committee will hold chemicals-in-foods-and-cosmetics hearings in New York January 10, 11, 14 and 15.

No definite schedule of witnesses has yet been arranged, but letters are shuttling between the Committee and prospective testifiers.

A more indirect effect of agricultural chemicals is the subject of a soon-to-be-published report of the Senate's Subcommittee on Labor-Management Relations; it looks at the sociological effect of chemicals—in so far as they have reduced farm labor needs, have sent workers into the cities.

Also out of Washington last week came the chemical industry's structural steel allotment for the first quarter of 1952.

It asked for 70,291 tons and got 46½% of it—32,733 tons. But some more may be squeezed out of the 8,781 tons allotted to textiles.

Allocation is now the order for selenium, too. Starting February 1, NPA requires, under order M-91, that none of the material can be delivered or accepted without its authorization. The order also limits inventories to a 30-day supply. Monthly reports are required.

There are further detailed regulations and exemptions; so if you make it, or use more than a pound a month, you must consult the order.

Two big defense uses are responsible for the pinch: rectifiers for military communication equipment, and stainless steel.

What will happen to all our aluminum capacity after defense output slacks off? Defense Mobilizer Charles E. Wilson, speaking at the opening of Kaiser's new plant (see p. 24), said it would replace copper in a lot of electrical applications.

Copper producers winced at these words. They're expanding output, too, and if industry goes all-out for aluminum, they fear they'll have a tough job selling the extra 250,000 tons a year they plan to produce.

Monsanto is heeding the "call of the wild." It has taken options on several acres (one tract alone is 170 acres) seventeen miles outside of St. Louis—and just six minutes from the municipal airport.

Plan is to move all the executive offices out there. The company has outgrown its present quarters; 900 employees are now at the head office, and another 175 are in the Star-Times building in downtown St. Louis.

Coal is increasingly in the spotlight as new techniques are explored to utilize its energy more conveniently or more cheaply.

Now Pittsburgh Consolidation Coal Co. will build a large pilot plant to test the commercial feasibility of its low-temperature carbonization process. Blaw-Knox is constructing it, will complete it next fall.

The process—already tested in a small unit—converts a ton of coal to 1,400 pounds of a solid fuel "char," 37 to 40 gallons of liquid tar, and some gas. The char provides a high-grade boiler fuel, and the tar can be refined to creosotes, tar acids or electrode-grade carbon.

The new pilot unit, to be located at Library, Pa., will provide cost and design data, permit evaluation of the chemical by-products.

Another way to skin the cat is underground gasification, and the first international conference on that subject will take place in Birmingham, Ala., January 28-30.

Tests similar to the Alabama experiment have been carried out in Belgium, England, France and Italy; and engineers from those and other countries will compare notes, examine U.S. methods.

You can expect allegations and counter-allegations to fly thick and fast as a result of Archer-Daniels-Midland's $2,178,000 damage suit against Werner G. Smith, former A-D-M executive vice president.

Smith sold his Cleveland firm, Werner G. Smith Co., to A-D-M in 1929. Smith remained with A-D-M until last year when he resigned, sold his interest in A-D-M, and set up his own firm.

A-D-M has now gone through the records, charges Smith made huge profits by setting up his own company, Spermacet Whaling Co., to catch whales and sell the oil to A-D-M at $370 a ton.

Smith also controlled another firm (Smidas, Inc.), alleges A-D-M, which handled sales of A-D-M's processed whale oil.

Keeping the ocean in its place is the problem on which California will spend $450,000 in Los Angeles County alone.

Along twelve miles of coastline between Playa del Ray and Palos Verdes, 50,000 acre-feet of seawater is intruding annually, causing abandonment of several municipal and industrial wells because the salt content has risen above 1,500 parts per million.

Now five wells-in-reverse will be drilled along one mile of coast, and 2½ billion gallons of fresh water will be pumped into them over a two-year period.

Measure of the project's urgency: NPA has already allotted scarce steel for well casings and pipelines.

Too many invitations to the party? It seems that the Delaney Committee went right down the list of cosmetics firms, sent letters to all of them asking them to testify at the New York hearings next month.

Committee Counsel Kleinfeld is now busy paring the list, trying to settle for 35 witnesses, admits he "can hear just so many" during the four days scheduled for the hearings.

Chemical wage negotiators are busily scanning provisions of a contract just signed between American Potash & Chemical and the Trona, Calif., local of United Mine Workers. The 18-month contract calls for a flat hike of 8¢ an hour; additional benefits bring it up to 11¢.

. . . The Editors

BUSINESS & INDUSTRY . . . . .

MCA In High Gear

The "new" MCA gathered in New York for hard work, hard problems, and hardheaded solutions.

Nine panel sessions were the backbone of the new "get-down-to-business" outlook of the chemical industry.

Full public relations program announced by the organization will cost $170,000 as a start.

A revitalized MCA, sharply alive to the problems facing the industry and the nation, met in New York's Waldorf-Astoria last week, and got down to earth and cases.

MCA has found a big job to be done, and is doing it. Last week's meeting, the most successful and dynamic in MCA's history, was only the beginning of the "new" MCA. At the luncheon session, Charles S. Munson outlined a face-lifting program of public relations "to make MCA an articulate spokesman of the great and dynamic industry we represent."

The best evidence of the "new look" in MCA was president Merck's disclosure that a total of $170,000 has been budgeted for the new policy, compared to last May's $22,500. And one of the first items on the agenda of the new public relations machinery will be that present "hot potato," chemicals in foods.

As if to demonstrate its renewed vigor, the session quickly got luncheon and speeches out of the way, and went to work in a series of all-afternoon panels. Running concurrently, the panels—made up of top executives from all parts of the industry—proved to be lively sessions, with plenty of ginger, and a lot of straight talk.

Executive Development Panel

Myles L. Mace, Harvard; Dwight R. Means, Columbia-Southern; George B. Corliss, Standard Oil (N.J.); Francis J. Curtis, Monsanto; Thomas H. Nelson, Executive Training Inc.

". . . the traditional way is not filling the pipeline of executives fast enough . . ."

The words of Dwight Means keynoted the session on the rapidly growing need for executives in the chemical industry. Today, it was pointed out, one of the principal jobs of an executive is to develop executives, and should include the top men.

Essentially, a program should contain four steps at least:

- Analysis of executive needs
- Evaluation of personnel
- Selection of promising candidates
- Training

Curtis of Monsanto had one warning to add: Modern life means greater government activity, and training must include methods and viewpoints of government, and even exchange of personnel for experience.

Plant Defense Panel

Henry Johnstone, Merck; Charles H. Carter, Jr., Atlas Powder; Richard L. Davies, Pennsalt; P. B. Lewis, Du Pont; R. S. McEwen, Metalsalts.

". . . plant defense is a matter not for the government alone but for the individual company"

The big problem in organizing a plant for defense is to get the idea to the man in the factory that it is necessary actively to defend the plant.

Davies suggested a plan for a line of responsibility from the plant superintendent, to the company, to business associations, to the government. Both Du Pont and Merck indicated they assign specialists to specific defense jobs and issue manuals.

In closing, Bob McEwen of Metalsalts pointed out that a small business has all the defense problems of a large one without any chance to use specialized personnel, and pleaded, somewhat wryly, for a little relief from the mounds of government paper work involved.

Materials and Allocations Panel

Kenneth H. Klipstein, NPA; Henry H. Fowler, NPA; George W. Naylor, Koppers; Osgood V. Tracy, NPA; Felix N. Williams, Monsanto.

". . . I hope Santa Claus may bring it [sulfur allocation order]."

CONNOR: Manpower the factor.

JOHNSTONE: Plant defender.

HUSTON: PR means friends.

KLIPSTEIN: Steel and sulfur.

This "hot" session moved largely around the jackpot questions of sulfur and steel. On sulfur, Osgood Tracy indicated that industry might possibly get a Christmas "present"—the allocation order.

Industry men complained over the extreme difficulty in getting small stainless steel parts. Big pieces are easier, so that the situation is one of having tanks but no pipes! Fowler indicated a possible meeting on this for the near future.

Price and Wage Control Panel

A. T. Loeffler, Monsanto; Alex Hawes, Fowler, Leva, Hawes & Symington; Alfred Letzler, OPS; Charles S. Maddock, Hercules; Francis J. O'Connell, Allied.

". . . we are not desirous of unnecessarily irritating businessmen."

Industry men on the panel took issue with the arbitrary powers given OPS to reject any and all calculated prices under CPR-22 and SR-17, particularly with Section 38 of CPR-22 which allows OPS to reject figures and push prices downward. Maddock claimed it allowed administrators too much arbitrary power rather than setting down cut-and-dried laws for all to see.

In rebuttal Letzler said that CPR-22 was actually an easier-to-follow regulation than GCPR and industry was "tilting at windmills" when it feared arbitrary government action under the law.

Manufacturers were urged to let "Washington hear their gripes, since, without specific objections, the Government boards don't realize the hardships exist."

Labor Relations Panel

James J. Healy, Harvard; John L. Davenport, Pfizer; W. P. Gage, Shell Chemical; H. C. Little, American Cyanamid; Wilfred H. Winans, Union Carbide.

". . . Let's not forget when we deal with union members, we're dealing with our workers too.. . ."

The outlook for the future in industry's relations with organized labor shows that unions will probably demand: productivity raises, guaranteed minimum wage, larger or more secure fringe benefits. In addition some see a stronger drift toward union control of the work force (hours, transfers, overtime, promotions, etc.). But one of the most radical changes in recent months seems to have been the shift of bargaining from the plant to Washington, where it takes place between industry and labor members of WSB. Industry now must watch WSB for what is going to happen.

Unionization of technical people was considered, and the consensus held that the only way to keep them from organizing is to give the same advantages as unions—only better. "If they organize, it's our own fault," said Winans.

Public Relations Panel

Howard Huston, American Cyanamid; Bromwell Ault, Interchemical; Harold Brayman, Du Pont; John W. Hill, Hill and Knowlton; George W. Merck, Merck.

". . . With public sentiment behind it nothing can fail . . . without it nothing can succeed." (Lincoln)

Public relations is a job for the individual company—and a full time job. This was the essence of the discussion. The public is the boss. If it thinks industry is not good for it, there will be legislation.

The public today has a keen interest in science, so let's get out and identify the chemical industry with science and reap the rewards, they said. One of the best ways to do this is to grant scholarships, even at high-school level.

Whatever course is adopted, public relations are a must and have been overlooked too long by many in chemical industry. The products of the industry are glamorous, but the industry isn't. And as Hill pointed out, the clam-like attitude of the British steel industry put it in the position of having few, if any, friends when nationalization knocked on the door.

Manpower Again: In opening the panel on technical manpower, Ralph A. Conner, vice president of Rohm & Haas, sounded the warning, "The limiting factor in industry may not be taxes but technical manpower." Complicated as it is by the draft situation, the problem of securing the right type of technical and scientific personnel is acute.

"Normalcy?" After the all-day sifting of present and near-future problems facing the industry, the meeting closed to the challenging, if pessimistic, words of Beardsley Ruml. Not only did Ruml express doubts that the "defense emergency period" will end in ten years, but he asked, what makes all of us who cry for "normalcy" think that the pre-1941 period was normal? "Perhaps," said Ruml, "the period which we left in 1914 was the abnormal period." Perhaps today, with all its crises and problems, is "normal," and we'll have to live with it.

Export Packaging

The problems of proper packaging for export, long a thorn in the side of many American companies, will take a step towards solution when two new groups organized by the Packaging Institute go into operation early next year.

One, the Advisory Group on Export Packaging, will be composed of representatives of various associations and organizations interested in export packaging; the other, the Export Packaging Policy Committee, will be made up of the division chairmen of the Packaging Institute's technical committees.

A Big Job: Faced with a growing notoriety for inadequate packaging for foreign markets, particularly when compared to England and Germany, various export groups have tried to tackle the problem—but with little success. Some, such as the Maritime Association, didn't know enough about packaging. Others were not big enough to operate in any but restricted areas; and a general lack of centralization hampered efforts to do the comprehensive job necessary.

After many years of discussion and abortive efforts, the problem was dumped in the lap of the Packaging Institute—a technical association of some 330 corporations engaged in the various aspects of packaging. But even the Institute felt that the job was too large to be handled in its normal way; i.e., with small technical committees.

Clearing House: In studying the problem, the Institute decided that no single technical committee within the Institute itself could handle the job. What was needed was a type of clearing house to which the many organizations outside the Institute, and the 18 technical committees with-

in the Institute, could bring their specific knowledge and problems.

The result is the Export Advisory Group, composed of such organizations as the Armed Forces, export groups, trade associations concerned with the manufacture of goods for export, container manufacturers' groups, associations of packaging materials manufacturers, and other groups interested in the problems of export packaging.

The Advisory Group will operate as a focal point for all information and knowledge of foreign requirements and difficulties. It will not attempt to solve specific troubles or provide a consultation service, but will determine what problems need solving, and supply all possible information to the groups that will tackle the specific tasks.

Policy Level: Within the Institute itself, it was felt that even with the Advisory Committee to collate all possible troubles and information, the job was still too big for any single committee. It was necessary to decide what jobs needed study, who was best fitted to do them, and which took precedence. To do this the Institute set up an Export Packaging Policy Committee, headed by M. J. Odell, packaging consultant, and composed of the division chairmen of the Institute's technical committees, to supervise and coordinate.

The Policy Committee takes the problems and knowledge from the Advisory Group, decides which technical committee should handle it, determines whether the problem is narrow enough for any technical committee to handle, suggests the creation of new technical committees where the need is strong enough to warrant it, and generally supervises the technical work.

Line of Communications: Actually, what the Institute plans to accomplish with the new set-up is to establish clear and direct lines of communication in the field of export packaging, where all interested parties have a say and participate in the work, where duplication will be eliminated, where all possible sources of information will be utilized, and where problems can be reduced to a workable level for actual technical study.

It is apparent that in the course of a few years, the Export Group will become the repository of a broad fund of knowledge and experience that cannot help but improve export packaging.

Abroad Too: American packaging for domestic consumption has a deservedly high reputation, but it looks as if companies tend to be more careless abroad. They seem to overlook the different problems involved in foreign markets, and package exactly as they do for home consumption.

The matter of the ideal quantity per container is apparently neglected by the American exporter. Such factors as the best method of labeling for the foreign market are little understood. (It has been found, for example, that a foreign consumer tends to identify a product by the picture on the label, indicating that a retail container should have a picture prominently displayed on the label.)

Information on physical and climatic conditions is important. For example, it is one thing to package for the coast of Brazil, and quite another for the interior. Hazards such as pilfering, either en route or in the export market, are important and often underestimated.

These, and other matters, will be grist for the mill of the new groups. But perhaps the most important service will be the collecting of methods which have been used to solve the many problems involved in exporting, and the indication of which succeeded and which failed. This alone should save enough time and effort and waste to justify the system.

Sun Sues

The Sun Oil Co. has instituted a suit in the U.S. District Court, Philadelphia, against the Transcontinental Gas Pipeline Corp. Reason: As a result of serious leaks in Transcontinental's pipeline where it passes under the Delaware River near Sun's Marcus Hook refinery, Sun claims the pipeline is a serious menace to the refinery and other plants in the area.

In a three-part suit the oil company charges, "ignition of escaping gas can reasonably and foreseeably be expected to ultimately result in an explosion and/or fire of catastrophic proportions."

Principal Aim: The principal aim of the suit is to require Transcontinental to comply with specifications it submitted to the Army engineers before the Army gave it permission to build the 12-inch line under the river to New Jersey.

Sun Oil maintains that the pipeline company did not live up to these specifications, which resulted in the line becoming a serious danger. According to Sun Oil's charges, Transcontinental did not lower the line to a depth that would allow free navigation on the river; did not ballast the trenches with rock or other suitable material; and did not mark the line with buoys; all required in its prior specifications.

The upshot of this "neglect," charged Sun Oil, was that two of Sun's tankers allegedly fouled the pipeline with their anchors, causing leaks in the pipe which set up geysers of gas in the river.

Sun Objects: As if to rub salt in Sun's wounds, Transcontinental, according to Sun, has threatened to sue for damages to the pipe by the anchors of the oil company's tankers, and therefore Sun is also asking for a declaratory judgment to absolve it from liability.

Final blow in the rather heated squabble, is Sun Oil's request for damages of $1,500 from Transcontinental as reimbursement for the money Sun Oil spent in helping Transcontinental to shut off the gas line.

Whatever the original cause of the controversy between the two companies, any ruling will certainly be based on Sun's contention that the pipe line company has not fulfilled its requirements.

Current List of DPA-Certified Chemical Facilities

COMPANY	LOCATION OF FACILITY	PRODUCT	AMOUNT ELIGIBLE	PERCENT
Cerium Metals Corp.	Niagara Falls, N. Y.	Rare earth metals	$ 160,000	65
Rare Earths, Inc.	Passaic County, N. J.	Rare earth chloride	45,100	65
Stackpole Carbon Co.	Badin, N. C.	Electrodes	446,100	65
Union Carbide & Carbon Corp.		Fluoroethene resins	1,609,000	60
Carolina Aluminum Co.	St. Marys, Pa. Kanawha Co., W. Va.	Carbon anodes for aluminum production	207,333	65
Filtrol Corp.	Jackson, Miss.	Filtrol desiccant	131,605	60
West Va. Pulp & Paper Co.	N. Charleston, S. C.	Kraft paper	———	55
B. F. Goodrich Chemical Co.	Avon Lake, Ohio	Polyvinyl chloride resins	5,377,960	50
Hooker-Detrex, Inc.	Ashtabula, Ohio	Thichlorethylene	1,491,522	50
The Chas. Taylor Sons Co.	Taylor, Ky.	Synthetic mullite	45,500	65
The Chas. Taylor Sons Co.	Taylor, Ky.	Synthetic mullite	49,000	65
Matthiessen & Negler Zinc Co.	La Salle, Ill.	Cadmium	200,039	60
Kaiser Aluminum & Chemical Corp.	State at large, La.	Aluminum	6,000,000	70
Filtrol Corp.	Salt Lake City, Utah	Reclaimed sulfuric acid	119,935	70
Kaiser Alumifium & Chemical Corp.	Spokane (Mead), Wash.	Cryolite	456,000	70

CHRISTMAS PARTY: Bonus in some stockings.

One Way to Spread Cheer

Government regulations on Christmas or year-end bonuses have little effect on what goes into employee stockings, for most chemical companies are following last year's pattern, CW survey reveals.

The plans vary from "no bonus" to as much as 17% of annual pay. Often payments are limited to salary personnel, presumably on the basis that hourly workers are taken care of in union contracts, but many companies give the same—usually at an office or plant party—to all workers.

Actually companies had little to worry about in the way of Government approval, for both the Wage Stabilization Board and the Salary Stabilization Board had established that a company which had given a bonus before, could do so again if it figured the bonus the same way. One exception is if the bonus is related to company earnings or profits. In this case, payments to salaried employees must be paid out of a "bonus fund" which is limited in amount, and no bonus can be higher than the highest single bonus previously paid.

There was no allowance for companies that had not granted bonuses previously. But less than a month before Christmas, WSB (ruling on hourly workers, salaried employees covered by the Federal 40-hour week law, and salaried employees represented by a union) relaxed its regulations to permit an employer to give a first-time bonus, but the limit was set at $40. SSB's rules, which apply roughly to employees exempt from the Federal wage-hour law and not in unions, are expected to be brought in line.

No Changes Made: The modification for first-timers had no effect in the chemical industry, as far as *CW* could discover. Those companies that haven't given Christmas or year-end bonuses (the Government uses the terms synonymously) in the past—and many of the biggest are in this category—haven't altered their thinking on this point this year.

In most of these cases, there are retirement plans, hopitalization plans and other benefits which the companies feel obviate the necessity of anything more elaborate than an office party at Christmas. Nor has any pressure from unions or employee groups developed in the wake of WSB's ruling permitting a $40 deviation from previous policy.

A Few Stayed: Only a few of the companies queried wanted to do more handsomely by their employees than Washington authorities, trying to combat inflationary pressures, would grant was wise. Only one of these put in a request—with little hope of approval—to WSB; the others thought it wouldn't be worth the effort.

The vast majority of manufacturers were happy to go along with stabilization policies—all except the $40 concession, which most thought a poor way "to stabilize."

Here is the form some of the typical plans took:

- Company employing 6,000: bonuses to all on the payroll over three months. Those with 25 years' service received 40% of one month's base pay; one year, 25%; less than one year, 10%. The maximum was $300.
- Company employing 7,000: two weeks' salary to those employed one year or more.
- Company employing 8,000: percentage of gross earnings ranging from 0.5% to 2.5% for employees exempt from wage-hour law. Those not exempt got 3% if employed at least six months. Company officers and employees earning $20,000 or over were ineligible.
- Company employing 2,000: something for all, regardless of length of service.

Salaried employees got $25, plus $25 for each year of service, up to a top bonus of $100. Those hired after September got $20; after December 1, $10.

Hourly employees were given $100 for 20 years of service; $75 for 15; $50 for 10; $25 for 5; $20 for 4; $15 for 3; $10 for 2; and $5 for 1.

Not So Merry: Employees—usually in the high executive echelons—whose bonuses are based on company profits have somewhat less to rejoice over this year, however, despite the "same treatment." For as one pointed out, Federal taxes are biting not only into company profits, but also into "personal profits" to which such bonuses usually contribute much.

Fluorides Get the Nod

Fluoridation of drinking water supplies received top-level recommendations last week from the Medical Sciences Division of the National Research Council and the American Medical Association.

In each case, however, approval was qualified by a statement that rate of application must be controlled. Fluoridation, NRC asserted, should be undertaken only under expert dental and engineering supervision by state boards of health. Said the AMA: Application of fluorides is safe when no more than one part per million is added to water supplies.

Approval by these two groups should scotch charges that controlled fluoridation is "a diabolical thing . . . to poison all the people" and that fluorides (1) prevent rapid blood coagulation, (2) make bones brittle, (3) deleteriously affect an unborn child, and (4) are hard on the kidneys.

NRC's report stated that "the margin between the optimal quantity of fluoride in drinking water which is required for maximum benefit in tooth

development and the amount which produces undesirable physiological effects is sufficiently wide to cause no concern."

While the report points out that the main benefit in fluoridation is experienced by children whose teeth are being formed, it states there is some evidence to suggest that it confers some measure of protection to adults' teeth.

Group Recommendations: The committee advocates that those communities with water not now containing fluorides, check into the practicality and cost of bringing concentration up to recommended levels: 1.0-1.5 p.p.m. in the North and 0.7 p.p.m. in the South where more water is consumed per capita.

Meanwhile, state health officers, into whose lap supervision was thrown, have been told by a fluoridation-plugging Public Health Service official that the program is being held up by lack of qualified personnel.*

Dr. John W. Knutson, chief of USPHS's Dental Public Health Division, reported that better than nine out of ten of the country's public water systems serve communities of 10,000 persons or less. For each one to have a full-time trained water works engineer isn't too feasible economically.

In such cases, Knutson told health officers, they should be prepared to help provide these services to the community:

- Chemical analysis of the drinking water supply.
- Study and analysis of sources and capacity of water supply, consumption rates and population trends.
- Determination of the point in the water processing system where fluoride compounds can be added most effectively and efficiently.
- Recommending which fluoride compound is most suitable for use in the water system, and determining what type of feeding equipment is required.
- Finding out the storage facilities necessary for maintaining an adequate supply of the fluoride compound.
- With the help of chemical and equipment suppliers, training water works operators and personnel in the hazards of handling fluoride compounds, teaching them how to feed fluorides properly and how to make the necessary chemical tests.

Whys of the Case: Knutson's recommendation of fluoridation went considerably further than that of the NRC. "It can be stated unequivocally," he said, "that no community can now afford the luxury of continuing to use fluoride-free drinking water. The cost of continuing to do so is tremendous."

According to Knutson's reckoning, 138 of the 16,750 public drinking water supplies in the U.S. at present have artificial fluoridation, and 1,750 have enough or too much fluorine naturally. That leaves 14,862 where fluoridation is still in the future. At present rates of adoption, it would be 150 years before these are converted.

But where it has been relatively tough going, the new endorsements—despite their dependence on proper control—should make it considerably easier for communities to overcome opposition to fluoridation.

LABOR . . . . . .

A restraining order, submitted in Common Pleas Court of Cuyahoga County, Ohio, against officials of the United Auto Workers (AFL) local in the Ashtabula plant of National Distillers Chemical Corp., was rejected recently.

The injunction would have stopped union officials from spending union funds, put the funds in escrow, stopped the company from deducting union dues and initiation fees, and required union administrator, Ted Weiss, to present an accounting of how he spent union dues.

Since Oct. 15, when the injunction was asked, the bank and company have been unable to check off dues, but both can now carry on in the usual manner.

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The Chamber of Commerce of the U.S. sees the drive for union pensions and welfare plans continuing into next year. In addition the C of C predicts that wage increases based on increased "productivity" will be high on union lists of demands. Both these items, says C of C, will be claimed as non-inflationary and equitable.

In view of the fact that the Wage Stabilization Board has already granted a 4-cent increase to the automobile industry's workers on the basis of "productivity," the C of C's prediction seems a safe bet. Industry can look for more demands based on increased production—labor is going to ask for a cut of increased output returns.

EXPANSION . . . .

Sulfuric Acid: Allied Chemical & Dye Corp. plans to construct a $9 million sulfuric acid unit at Elizabeth, N.J.

Nutshells to Newsprint

NEWSPRINT INK based on a liquid obtained from cashew nut shells and allied resinols is being manufactured in India for the first time. Developed at New Delhi's National Physical Laboratory, the new ink is claimed to be comparable to best foreign inks available. At present almost 2 million lbs. of ink are imported annually to supply India's 5,000 newspapers and magazines.

* Lack of state health personnel may not be the only reason. A Niles, Ohio, councilman voted against flouridation. Reason: The USPHS told him it was sending him pamphlets on the subject, but he received instead booklets on salmon fishing in Alaska and methods of canning Hawaiian pineapple!

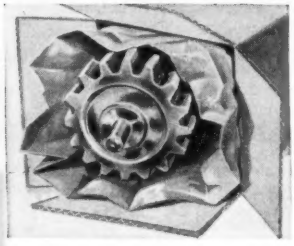
MONSANTO
CHEMICALS — PLASTICS

FOR YOUR INFORMATION

Every month Monsanto publishes these pages of pertinent information which may be useful to you. This issue discusses:

Special Chemicals	Corrosion Inhibitor
Sludge Recovery Units	Insecticide
Viscosity Index Improver	Germicide and Fungicide

Additional information will be furnished on request.



MONSANTO DICYCLOHEXYLAMINE MAKES RUST-PREVENTING PAPER POSSIBLE

Manufacturers of ferrous metal parts are saving time and money by packing their products with a new paper that prevents rust. The paper is coated by a patented process that employs dicyclohexylamine, phosphoric acid 75% and other materials. Monsanto is the only American manufacturer of dicyclohexylamine.

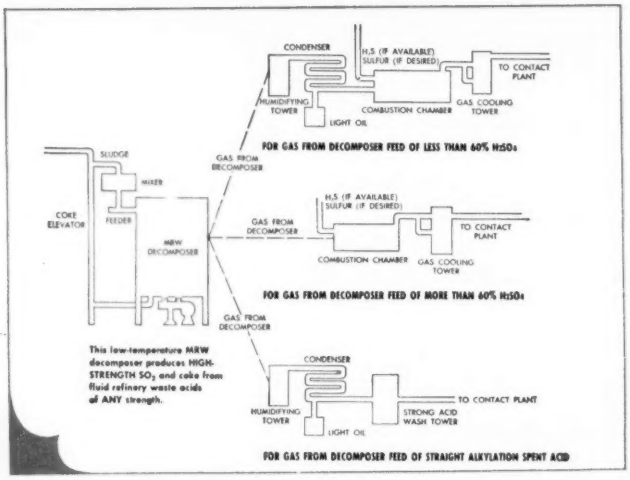
Use of the chemically treated paper makes it unnecessary to slush parts with grease. Packing does not need to be tight enough to seal out moisture and other corrosion factors.

As much as 60% of packaging time is saved. Shipping costs are lowered because lighter containers can be used. Parts reach their destinations ready for use, saving time formerly used for cleaning. Flammable solvents used to clean ordinary rust preventatives from metal parts are no longer needed, thus eliminating a dangerous fire hazard.

The new packaging method, currently being used for products ranging from watch parts to automotive parts, gives positive protection as long as the inhibiting chemical is present in the package. Protection for at least five years has been observed in outdoor exposure.

The protection is effective in climates from the Arctic to the tropics . . . even in salt air. It has been thoroughly tested by a number of leading manufacturers.

If you manufacture equipment employing ferrous metals, this new paper can perform a valuable service for you. We will be glad to give you names of manufacturers of this new packaging material. Just check the coupon and mail it to us and we will reply promptly.



HOW TO MAKE WHITE SULFURIC ACID FROM REFINERY SLUDGE

Clean, white sulfuric acid, of any desired strength, can be made from oil refinery sludge or H_2S—or both together—with a Monsanto-Ross-Wilde sludge recovery unit. (Various operations of the unit are diagrammed above.) The Monsanto-Ross-Wilde unit may operate with existing contact sulfuric acid plants, or Monsanto will design sludge recovery and sulfuric acid units as a single project.

In addition to sulfuric acid, these units recover oil from some types of sludge. The recovered oil can be refined into salable products.

Refineries can improve their community relations by eliminating stream and atmospheric pollution. Urgently needed tank cars, now used to carry away sludge and to return reclaimed acid, will be available for other purposes once the Monsanto-Ross-Wilde sludge recovery unit is in operation.

Because of the present sulfur shortage and the growing use of sulfuric acid, a Monsanto-Ross-Wilde sludge recovery unit should be a sound investment for the present and future.

If you have a refinery sludge problem, mail the coupon for a booklet on the Monsanto-Ross-Wilde process.

SANTODEX GIVES VISCOSITY INDEX OF 140 OR HIGHER

Expanded production of Santodex,* Monsanto's viscosity index improver, makes the product available in greater quantities to users and obtainable to many we could not serve in the past.

Developed primarily for improving the viscosity index of motor oils, Monsanto Santodex makes possible indices of 140 or more.

Santodex is an economical viscosity index improver that offers the following advantages:

1. Improves ease of engine starting at low temperatures.
2. Reduces engine oil consumption.
3. Improves piston ring seal.
4. Reduces number of viscosity grades of motor oils necessary to meet field requirements.
5. Provides more effective use of lighter viscosity lubricating oil stocks.
6. Meets specifications containing high viscosity index requirements.

Mail the coupon for a free copy of Monsanto Technical Bulletin No. O-48, "Santodex, Viscosity Index Improver." The publication contains 12 pages of valuable information.

Research Chemists' Corner

You may find something new here

You may find opportunities for new product development and improvement of your present products in these five special Monsanto Chemicals. Look over their properties and, if you see research possibilities in them, mail the coupon or contact the nearest Monsanto Sales Office for samples. Samples of any or all of them will be sent to qualified chemists without cost or obligation. If you find uses for them you can count on these chemicals to be available in commercial quantities.

PHENYLACETONITRILE

STRUCTURAL FORMULA:

APPEARANCE:	Clear water-white liquid
ASSAY:	97.0% Min.
CRYSTALLIZING POINT:	Minus 23.0° C. Min.
BOILING RANGE:	
First drop	232.0° C. Min.
1–96 cc.	3.0° C. Max.
100%	6.0° C. Max.
Dry point	238.0° C. Max.

PHENYLACETAMIDE

STRUCTURAL FORMULA:

APPEARANCE:	Fine white crystals
ASSAY:	98.5% Min.
MELTING POINT:	158.0 C. Min. to start
ODOR:	Characteristic

beta-PHENYLETHYLAMINE

STRUCTURAL FORMULA:

APPEARANCE:	Colorless to slightly yellow liquid
MELTING POINT ASSAY:	99.0% Min.
SP. GR.:	at 15°/15° C. 0.963–0.967

POTASSIUM PHENYLACETATE

(64% SOLUTION)

STRUCTURAL FORMULA:

APPEARANCE:	Colorless to slightly yellow liquid
ASSAY:	64% Min.
pH:	7.0 Min. 8.0 Max.
HEAVY METALS:	30 ppm Max.
REFRACTIVE:	Refractive index at 25° C. 1.4750–1.4820
ODOR:	Characteristic

PHENYLACETIC ACID

STRUCTURAL FORMULA:

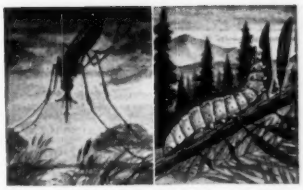
APPEARANCE:	White crystals
ASSAY:	99.0% Min.
ODOR:	Characteristic
MOISTURE (H_2O):	0.50% Max.
MELTING POINT:	76.0° C. Min.

SANTOPHEN 1 KILLS GERMS AND STOPS FUNGI

Monsanto Santophen* 1 (ortho-Benzyl-para-chlorophenol, technical) is a versatile germicide, toxic to both bacteria and fungi.

Santophen 1 is used extensively in liquid soaps and cleaners . . . in rug shampoos . . . in surgical soaps . . . in cleaners for restrooms and locker rooms . . . in formulations for use in hospitals on floors, walls, linens and surgical instruments.

For further information on Santophen 1, mail the coupon for a copy of Monsanto Technical Bulletin No. O-51, "Santophen 1 for use in disinfectants."



DDT CONTINUES TO SCORE VICTORIES

DDT has been victorious in fighting insects in two widely separated fields. Both are extensive operations against pests which have been problems for years.

Spruce budworm, attacking forests in the Pacific Northwest, has been sprayed with DDT in one of the biggest projects of its kind in America. Spraying from the air, pest fighters have covered around 2,141,000 acres of timber.

Malaria-carrying mosquitoes have been controlled by the use of DDT in homes and in outdoor toilets. New infestation due to floods and, in some measure, to the return of military personnel carrying the disease, has made increased vigilance necessary.

A pest-control program recently announced, using DDT and other insecticides, saved $24,000,000 for the Army. The entire cost of the program, including personnel, equipment and insecticides, was only $1,300,000.

For information on DDT and its uses, contact the nearest Monsanto Sales Office or mail the coupon for literature.

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MONSANTO CHEMICAL COMPANY, 1700 S. Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

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MONSANTO
CHEMICALS — PLASTICS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

SEND INFORMATION:
- ☐ Dicyclohexylamine.
- ☐ Makers of rust-preventing paper.

SEND LITERATURE:
- ☐ Monsanto-Ross-Wilde process.
- ☐ Bulletin O-51 (Santophen 1).
- ☐ Bulletin O-48 (Santodex). ☐ DDT.

SEND SAMPLES:
- ☐ Phenylacetonitrile. ☐ Phenylacetamide.
- ☐ beta-Phenylethylamine.
- ☐ Potassium Phenylacetate.
- ☐ Phenylacetic Acid.

MONSANTO CHEMICAL COMPANY
1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information, samples or literature as indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

The plant site covers 120 acres. A major obstacle to the erection of the plant at this location was the objection by Singer Sewing Machine Co., which feared that the chemical operations would prove detrimental to its metal working plant.

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Plastic Pipe: Golden Bear Manufacturing Co., recently purchased and reorganized by a group of Southern California investors, will transfer its operations to a new plant at the first of the year. Completion of the new unit will almost triple production of Lucite and Tenite plastic tubing for underground mains; and it is expected that sales will be upped to $10 million per year.

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Cat Cracker: A new catalytic cracking plant at Ioco, B.C., will provide a large portion of Imperial Oil Co., Ltd.'s $24 million expenditure at this unit and at its Regina Sask refinery. It is expected that the expanded Ioco refinery will tie in with the proposed oil pipeline from Edmonton, Alberta, to Vancouver, B.C. The proposed 24-in., 693-mi. line will be built by Trans-Mountain Oil Pipe Line Co.

COMPANIES. . . .

Duval Sulphur & Potash Co.: The company has proposed to borrow $3½ million from the First National Bank of Boston. Proceeds of the 3% loan are to be used to pay a previous $2½ million loan and provide $1 million to complete construction of potash mining and milling facilities in Eddy County, New Mexico. The total cost of these facilities has been estimated at $8,206,000. In addition Duval plans to arrange an additional standby commitment of $500,000 by the bank to be used to replenish working capital if this should be necessary.

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Eavenson & Levering Co.: The wool scouring plant of Eavenson & Levering Co. at Camden, N.J. has been shut down for good. Believed to be the largest firm in the country doing commission wool scouring, the plant's closing will throw 350 employees out of work.

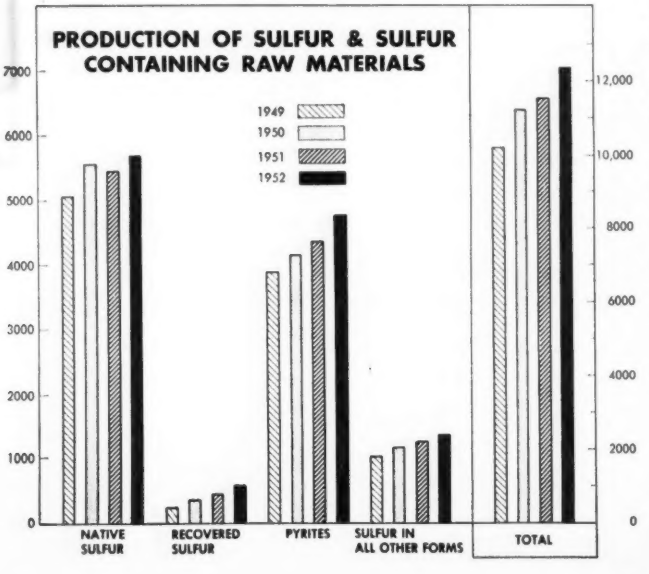
FOREIGN. . . . .

Oil Equipment: British export of oil equipment has been going on at an annual rate of $140 million as compared to $28 million before the war, and this year, despite the loss of the

Free World Sulfur Requirements Charted

USES OF SULFUR
(in 1,000 long tons)

	1949	1950	Est. 1951	Est. 1952
Sulfuric Acid	3539.1	3989.8	4409.8	4573.2
Sulfur Dioxide	731.7	887.8	1022.6	1131.0
Carbon Disulfide	377.4	515.6	611.8	669.7
Agricultural	409.8	419.8	502.9	513.8
Other Uses	361.4	516.0	587.1	708.6
Total	5419.4	6329.0	7134.2	7596.3



The sulfur shortage is possibly the best-advertised of the raw material dearths. Certainly it is one that probably affects more products, more people and more nations than any other. Now, after eight months' work, the Sulfur Committee of the International Materials Conference has made statistics out of these generalities.

The Conference, made up of fourteen countries, is the outgrowth of the Truman-Attlee talks that took place about a year ago. Object of the organization was to cope with the raw material shortages that, even then, were plaguing the rearmament effort. The method is the time-honored system of trying to allocate commodities to the spot where they'll do the most good for the overall effort.

In the United States, the Office of International Trade is the fount of pronouncements concerning foreign trade; whereas decisions affecting domestic commerce are handled through the NPA. ECA's Theodore Sweet is the U.S. representative on the Sulfur Committee.

By Questionnaire: Compilation of the data in the attached tables and charts was made by the collation of replies to questionnaires which the Committee sent out to interested non-Iron Curtain countries.

According to the Committee, the 1951 world sulfur requirements are about 7,134,200 long tons, but production is only 5,862,300 tons. Shortage: 1,271,900 tons. Requirements for 1952 are estimated at 7,596,300 tons, while estimated output will be 6,255,600 tons. Shortage: 1,340,700 tons.

Persian market, this annual rate has been maintained.

Britain's opportunity for supplying the oil industry has arisen with the growth of refining outside the U.S., and British manufacturers have undertaken to supply everything from bricks and cement to the most complex refinery equipment.

Thus, firms like B.T.H., English Electric, and Metropolitan-Vickers are now giving particular attention to electrical and mechanical equipment for oil fields and refineries; Stewarts and Lloyds and others supply pipes and tubes; and still other British firms make boilers and fractionating columns.

So far as specialized oil equipment is concerned, however, the biggest single development has been the licensing of American designs to British manufacturers. So far there has been no attempt to compete with American designs partly because adequate research funds are not available, partly because British companies feel that in the long run it would not pay them to compete.

To date, the industry's biggest worry is concern lest the shortage of steel hold up supplies and force overseas customers now purchasing British equipment to turn back to their former suppliers.

•

Sulfur: Australian industry is taking steps to make itself independent of world sulfur supplies. Discovery of new pyrite deposits in South Australia together with increased production from established pyrite producers in Tasmania, New South Wales, Western Australia, and Queensland is expected to do the job. It is believed that in the next three or four years combined production from these sources should at least be sufficient to meet needs of the nation's sulfuric acid plants.

•

Bauxite: Sulfates Ltd. of Australia is developing its Gippsland, Victoria deposits of bauxite. The company hopes that Australian demand for alumina-based catalysts for oil refining will prove of sufficient magnitude to warrant its going into commercial production.

•

Beryllium Oxide: U.S. and Brazilian capital share 50:50 in a beryllium oxide plant being completed by Proberil, S.A. at Resende, State of Sao Paulo on the Rio Paraiba. Operated in conjunction with and under patents of North American Beryllium Co., Inc., the new plant will have an an-

As can be seen from the accompanying chart, pyrite supplies nearly half of the sulfur used. Although the deposits of pyrite ore are relatively unlimited, the equipment for mining it is hard to come by. The Committee expects the demand to be 56,100 long tons higher than the 1951 production via pyrite of 4,395,300 tons of equivalent sulfur. The demand in 1952 is expected to be (again on an equivalent sulfur basis) 254,800 tons higher than the anticipated output of 4,745,500 tons.

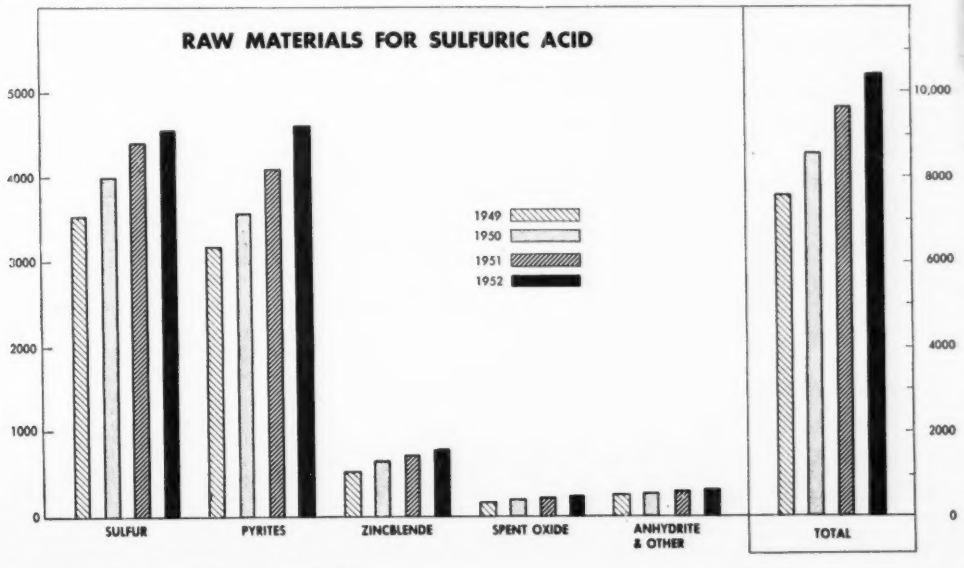
Conclusion: The present stringency of world sulfur supplies will continue until some time in 1953.

USES OF SULFURIC ACID

(from all sources)

(1000 long tons of 100% acid)

	1949	1950	Est. 1951	Est. 1952
Superphosphate	8367.8	8709.4	9627.6	10472.2
Ammonium Sulfate	3547.4	4263.7	4734.7	5020.8
Textiles	1442.8	1808.7	2102.5	2320.2
Dyestuffs	257.0	351.1	416.3	496.2
Metallurgical	1157.9	1355.4	1486.4	1651.5
Other	6181.1	7243.4	8211.6	8787.8
Total	20954.0	23731.7	26579.1	28748.7



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nual output of 90 tons of beryllium-oxide.

To insure adequate raw material supplies for the factory, the Proberil company has purchased the largest known deposit of beryllium ore in Brazil—that located in the northeast part of the state of Minas Gerais in the valley of the Rio Doce. The ore is reported to assay 11-14% beryllium.

•

Streptomycin: The Spanish government has recently been forced to import 1 million vials of streptomycin due to a pressing shortage. Spain's annual consumption of the drug is 3 million vials, most of which are imported from the U.S.

KEY CHANGES . .

B.B.S.T. Boonstra: From chief, technical laboratory, rubber-stitching, Delft, Holland, to head, rubber research group, Godfrey L. Cabot, Inc., Boston.

Homer R. Duffey: To vice president, chemicals department, Quaker Oats Co.

Gregg T. Ward: From general merchandise sales manager to general sales manager, footwear and general products division, United States Rubber Co.

T.A. Abbott: To manager, engineering research department, Standard Oil Co. (Indiana).

Donald Dunwoody: From assistant branch manager to branch manager, New York office, phosphate division, Monsanto Chemical Co.

Robert G. MacDougall: From Talon Inc. to featured fabric finishes department, Warwick Chemical Co.

John W. Purcell: From McLaughlin-Gormley-King Co. to insecticide division, S.B. Penick & Co.

H. Arthur Howe: From manager, phenolic products plant, Pittsfield, Mass., to manager, Coshocton, O. plant, General Electric Co.'s Chemical Division.

Arthur T. Bourgault: From manufacturing analyst to manager, phenolic products plant, General Electric Co.'s Chemical Division.

Charles F. Gerlach: To manager, industrial insecticide sales department, Wyandotte Chemicals Corp.

William I. Burt: Elected president, American Institute of Chemical Engineers. He is vice president-manufacturing, B. F. Goodrich Chemical Co.

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- Cupric Nitrate, Purified, Crystal
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- Magnesium Oxide, Purified, Neoprene Grade, Powder
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- Nitric Acid, Technical
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- Potassium Sulfate, Purified, Powder
- Potassium Thiocyanate, N. F., Crystal
- Silicic Acid, 'Baker Analyzed' Reagent, Fluorescent, Powder
- Sodium Hydroxide, 'Baker Analyzed' Reagent and N. F., Pellets
- Sodium Molybdate, Technical, Anhydrous, Powder
- Stannous Chloride (Tin Crystals)
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- Triple Carbonates (Barium Carbonate 56%, Strontium Carbonate 31%, Calcium Carbonate 13%)
- Zinc Acetate, Technical, Crystal

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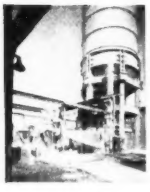

Quicklime silo and lime slakers in ethylene oxide and glycol unit at Jefferson's Neches plant.

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Briefs

From recent literature

Carbamate esters—especially suitable for use as plasticizers and high boiling solvents—can be prepared by reaction of a polyglycol bis haloformate, such as diethylene glycol dichloroformate, with a secondary amine. The temperature at which the reaction can be conducted depends upon the hydrogen chloride acceptor used. With pyridine or aqueous sodium hydroxide, temperatures below 25°C. are preferable and with calcium carbonate, temperatures as high as 50° to 100°C. are desirable.

Molded brake linings can be manufactured by use of a mixture containing a resin plasticized with a hygroscopic material, such as diethylene glycol. Approximately 1.4 weight per cent of the total mix must be plasticizer. These mixtures can be compressed at normal temperatures to the desired final form and curing accomplished by passing through a suitable oven without the application of pressure.

Purification and dehydration of natural and refinery gases can be effected simultaneously through the use of combination absorbents, such as monoethanolamine and diethylene glycol. Important improvements over prior processes have been achieved by the addition of low cost organic diluents to reduce substantially the solution viscosities. This results in more efficient contact of the absorbent with the gas and therefore reduces plant costs.

These developments are abstracted from recent publications or U. S. patents. They may suggest other applications of Jefferson Diethylene Glycol in your products or processes.

HERMAN SHELANSKI: A nonionic for a split personality.

Iodine Tamed

New combinations of iodine with surface-active agents enhance the halogen's germicidal activity, reduce its toxicity.

Nonionics, in general, are the most stable and efficient carriers; alkylphenoxypolyglycol ethers are among the best.

First commercial iodine-nonionic is now available in sample quantities from General Aniline and Film Corp.

Iodine as a germicide is unquestionably a split personality. It's about the most powerful antimicrobial known, exercising its inhibitory and lethal effect on bacteria, viruses, fungi, spores, yeasts, molds, protozoa and many other denizens of the microscopic world.

But this striking virtue is nearly cancelled by the element's toxicity and corrosive nature. A strong primary irritant and sensitizer, iodine doesn't particularly care whether it's chewing up bacterial or human protein.

Until very recently, iodine's faults were accepted with glum resignation, and its prepared form—usually the tincture—was little help in offsetting their harmful effects. But now, as a consequence of research by toxicologist Herman Shelanski of Philadelphia's Industrial Toxicology Laboratory, the whole iodine picture takes on a new appearance.

Shelanski's work with iodine carriers heralds the start of a bigger and better germicidal existence for the halogen. For some time it has been known that iodine is taken up by surface-active agents and water-soluble polymers (e.g. polyvinyl pyrrolidone) and held in some sort of loose chemical combination. These substances are known as carriers; and the combination of iodine and carrier is called an iodophor.

Vapor Vanished: The carrier provides a solubilizing medium for the iodine, giving rise to certain favorable modifications of the halogen's properties. Vapor pressure is reduced almost to the vanishing point; permanent staining of skin is eliminated; reactivity is slowed considerably. The reasons for this slowdown are not completely clear, but they hinge on intermolecular solution, formation of addition compounds, and steric hindrance from the micelles of concentrated carrier solutions.

Nonionic, cationic and anionic surface-active agents are all iodine carriers, differing in their capacity for the element and their reactivity with it. Shelanski found the nonionics to be the most stable carriers. Moreover, the iodophors they form are effective germicides and capable of water dilution without precipitating iodine. In these nonionic iodophors the total iodine is made up of an available (titratable) fraction and one that is neither available nor titratable. Amount of available iodine can be controlled to some extent by shifting the pH of the solution.

Alkylphenoxypolyglycol ethers turned out to be among the most efficient carriers; the specific nonionic used in much of the research was the ethylene oxide condensate of C_9 alkyl phenol. This material is commercially available from General Dyestuff Corp. under the name Antarox 8400.

Anhydrous solutions of iodine in the nonionic are stable. In addition, nonionic solutions containing as much as 25% iodine render the halogen soluble in water. One explanation for this aqueous solubility is that the iodine dissolves in the micelles of the nonionic, which themselves are soluble in water. On the basis of experimental evidence, solvation appears to be the mechanism underlying the dissolution of iodine in the micelles.

No Sting: Although the basic theory may be open to question, the benefits derived from the nonionic iodophor are indisputable. It gives greater total reactivity as a germicide than equivalent solutions of iodine in alcohol or potassium iodide. Iodine in a nonionic carrier has little or no effect on the skin, whereas the opposite is true of alcoholic and potassium iodide solutions. And unlike alcohol, nonionics cause no stinging sensation on the skin, produce comparatively less irritation.

Patch tests on the skin of 200 unselected subjects confirmed the relatively innocuous effects on the iodophor. Two series of tests, each based on three different concentrations of iodophor, were run. Results of the first tests showed that more than 75% of the subjects had no reaction to the undiluted (10% total iodine) iodophor; 89% didn't react to a 50% aqueous solution of iodophor; and no reactions to a 20% solution were noted. The reactions that were noted were for the most part not severe.

Results of the second series of tests were almost identical with the first. Conclusions drawn from the combined data: The iodine-nonionic halophor is a mild primary sensitizer in concentrations above 20%, but it doesn't tend to be a sensitizer.

Plenty of Uses: Applications for the new iodophors won't be too hard to find. As a highly efficient skin degerming agent, it is made to order for surgical and all external uses requiring bactericidal or fungicidal activity. Moreover, its antiseptic possibilities in hospital sanitation are bright; the iodophor's effectiveness against the

tubercle bacillus is a strong consideration here. Germicidal use in restaurants and dairies also shouldn't be overlooked. In addition, iodine-carrier combinations have distinct, if as yet unexplored, possibilities in medicine.

General Aniline and Film Corp. now is producing the first of the iodophors at its Product Development Department, Easton, Pa. The product has been named Antarate AV 441, is available in sample amounts at a cost somewhere in the range of $1.25 a pound. General Aniline doesn't think its new addition will compete with such standbys as the quaternaries, except in jobs that quats can't handle. Food for thought: The quaternaries can't hold a candle to the new iodophor for germicidal efficiency in hard or cold water.

Antarate AV 441 contains 10% titratable iodine, is a dark brown liquid. One practical feature of the product is that as long as color remains, so does germicidal activity. On the other hand there are other less appealing attributes; incompatibility with soap is perhaps foremost in this respect.

Although Antarate AV 441 is a reality, the book is nowhere near closed on iodophors. General Aniline is continuing its own research, now is considering farming out product evaluation studies to outside firms.

Combination Killer

Tetradecylamine-o-phenyl phenate is the most promising result of research by By-Products Processing Laboratories, Inc., aimed at developing improved industrial antimicrobials. Tagged OD-100, the product is a combination fungicide-germicide, has possibilities in a number of problem applications.

On the strength of the material's effectiveness against the microorganisms responsible for "athlete's foot," it will probably be useful as a disinfectant for shoe linings.

More along industrial lines, OD-100's abilities may prove valuable in protecting a score of substances vulnerable to bacteria and fungi; cardboard, fabrics, wood, etc., all benefited from the product's lethal activity in experimental tests.

Specific end uses worked out by By-Products Processing highlight the faith it has in its newest brainchild. The product is suggested as the active ingredient in citrus fruit waxing compositions for preventing mold, decay and stem-end rot. Of course Food and Drug Administration has a big say in this matter, and negotiations with the Federal agency are now in progress.

Because it doesn't weaken cellulose fibers, OD is also being primed for service as an impregnant for paper and cotton goods; a water dispersion of the product added to sizing materials is recommended by the manufacturer as the best way of putting OD's talents to work in this job. Other potential markets are in the manufacture of antifouling paints and protective coatings.

The new product may be had in two forms: the pure compound, which is designated OD-100, and a 37.5% solution in isopropyl alcohol, named OD-37.5. Its active ingredient tetradecylamine-*o*-phenyl phenate, is soluble in alcohols, ethers, esters, chlorinated hydrocarbons, fatty oils, aromatic hydrocarbons, ketones, waxes; in fact almost any organic solvent does the job. But the compound is insoluble in water, and therein lies both its chief failing and one of its most desirable features.

Dryer the Better: Being almost completely insoluble in water, OD's antimicrobial activity is nil in aqueous systems. But this same quality assures the user that the germicide won't wash out of fabrics and other materials once treated. It is possible, however, to formulate the compound as a highly dispersed phase in water if a cationic surface-active agent and a small amount of isopropyl or ethyl alcohol are included.

OD's fungicidal-fungistatic activity is at its best when the compound is applied as a solution of water-free organic liquid (especially perchloroethylene and mineral oil). Compared under the same test conditions with *p*-nitrophenol, the product gave the same kill as approximately one-third the concentration of the nitrated phenol, reports the manufacturer.

OD doesn't contain any heavy metals or halogens, is understandably less toxic than many antimicrobials. Skin irritation tests conducted by an independent testing organization show that a 2% solution of tetradecylamine-*o*-phenyl phenate in a volatile solvent (alcohol) isn't irritating to human skin. This fortunate circumstance should stand the new product in good stead in competition with many conventional commercial materials.

A brand new addition to the commercial antimicrobial roster, OD is comparatively untried in many of its envisioned money-making applications. How it will fare against such standbys as the quaternaries and phenolic derivatives is still a matter for speculation.

Close Look

PHYSICIST EUGENE ALEXANDRE gives the once over to France's newest proton microscope. The machine now is capable of magnifications up to 30,000 diameters; further refinements are expected to boost its blow-up power to the half-million range. Credit for constructing the machine belongs to Claude Magnan, assistant director of the Atomic and Molecular Physics Laboratory of the College de France, and Paul Chanson of Paris' Ecole Polytechnique. Alexandre served as technical consultant to the pair.

•

One For Two: Based on a simple method of reflecting radiation twice through the same optical system, the new Perkin-Elmer Model 99 Double Pass Monochromator permits double monochromator performance with single monochromator simplicity. The instrument will be useful as a pure source of chopped monochromatic light for spectrophotometric analyses in chemical, biological and medical studies. In such applications, it provides the high efficiency of a double monochromator system at a cost comparable to that of the single.

•

A First: Two acrylic rubbers are now in commercial production at American Monomer Corp., Leominster, Mass., Acrylon BA-12 and EA-5 are their names. The former shows good low-temperature characteristics and resistance to heat, hot oils, boiling water, oxygen, ozone and sunlight. Acrylon EA-5 has somewhat less low-temperature flexibility, but makes it up by increased oil resistance. Both are highly resistant to flex cracking. U.S. Department of Agriculture pioneered the new products.

New Resin: Naugatuck Chemical Div. of United States Rubber Co. is out with a new polyester laminating resin which stands up to temperatures as high as 500 F. It's expected to find use as a structural material in the manufacture of high-speed aircraft and guided missiles. The military will have first crack at the new product, but the civilian market will be supplied when production permits.

•

Up North: Construction is scheduled to begin within the next few weeks on Monsanto Canada Ltd.'s new Ville la Salle, Quebec, research laboratory and pilot plant. Estimated cost of the new facilities: $400,000.

•

NSF Grants: The National Science Foundation is accepting bids for a share of the $1.5 million it has earmarked for the support of basic scientific research during the coming year. To facilitate applications, the Foundation has just issued a guide for the submission of research proposals by institutions or individuals. Main factors in evaluating prospective grants are the scientific merit of the proposal and the competence of the investigator. If the subsidy is approved, individuals will receive quarterly, semi-annual or annual payments through the institution at which the project is carried out.

•

Wax From Coal: Wax from Saskatchewan lignite coal may be a commercial reality if experiments at the University of Saskatchewan are successful. Commercial wax long has been produced from the brown coals of Germany and the lignites of Devonshire and Western U.S. Similarity of these materials to the Saskatchewan variety sparked the current Canadian research.

Thus far experiments have not been sufficiently conclusive to determine whether the wax content of the Saskatchewan lignite is high enough to warrant commercial extraction. Lignites tested have produced no better than 4% wax as compared to 10% extractable from German brown coals and 20% from California lignites. But there's more to it; a pre-treatment procedure, which would increase the yield to about 8%, is now under scrutiny.

R. L. Egar, professor of chemistry, and S. D. Cavers, professor of chemical engineering, head up the university project. Their method of extraction leaches the wax out of the coal by means of a hot benzene-ethanol solvent. The wax produced is a hard, black material. Subsequent work will be aimed at lightening its color, adapting it to commercial applications.

•

On The Way: Ground was recently broken for a new $365,000 research laboratory at Borden Co.'s Chemical Division in Philadelphia, Pa. Scheduled for completion by next June, the new installation will be adjacent to the company's industrial resins plant. Activity in the new laboratories will be concentrated on the development of synthetic resins, coatings and binders.

•

Research Spur: More emphasis on creative research is the reason underlying the establishment by American Can Co. of a new Research and Technical Service Department. Designed to create and develop original ideas and techniques for the canning and associated industries, the new division will concern itself with applied research in the fields of packaging and container manufacture. Items for early consideration: conservation and eventual elimination of tin; cold sterilization of canned food with radioactive fission products.

•

Combined Attack: University of Pennsylvania and Philadelphia Quartz Co. researchers joined efforts recently in a probe of solutions that remove stearic acid from metal surfaces.

Experimental procedure was as follows: Slides of glass, zinc, aluminum and steel were dipped into molten stearic acid, then placed in an upright position in the cleaning solution for a ten-minute period. Results were photographically recorded.

The strong alkaline detergents showed the highest cleaning power. At high concentrations they salted out the stearic soap. High temperatures generally aided the cleaning process although the results obtained with zinc were poor in any case.

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Instrument Note: Consolidated Engineering Corp. of Pasadena, Calif., has made an addition to its line of mass spectrometers. The new instrument, Model 21-401, is designed for the analysis of mixtures of gases and light liquids, as well as for determining isotope ratios. It should prove useful in routine analytical work and fill research requirements for both mixture analysis and stable isotope tracer work. Unique feature: The need for refrigerants has been eliminated.

•

Melamine Process: A new patent, (U.S. 2,542,762) issued to Du Pont, describes the preparation of melamine by heating urea under pressure in a there's more of it; a pre-treatment ruthenium alloy.

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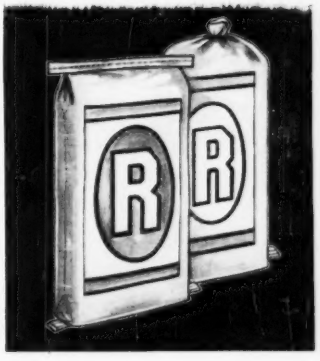

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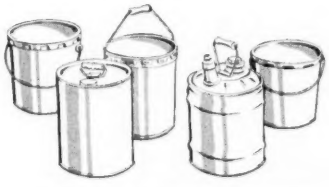

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SUGAR CANE: An estimated 60 million lbs. of wax from Cuba alone.

Cane Wax Gain

A team of Australian scientists has developed a process for refining crude sugar cane wax.

It employs a vacuum distillation and a chromic acid bleach instead of the conventional solvent extraction.

The Australians claim several advantages for the process, but it would probably be more expensive.

There is an estimated 60 million lbs. of wax per year that can be obtained as a by-product of Cuban sugar cane mills alone. That's why wax makers are keeping their ears tuned and eyes open for developments in the processing of sugar cane wax. And that's why American firms are showing more than an academic interest in a sugar cane wax process developed by a team of Australian scientists headed up by H. H. Hatt.

Sugar can wax occurs as a thin white layer on the outside of the sugar cane. During milling it becomes entrained with the juice; after clarification with lime it is deposited on the filter press cake. Apparently the wax content of the cake varies within wide limits, but 21% is reported for the Cuban-American Co's big sugar refineries at Centrales Chaparra and Delicias, Cuba.

New Approach: The tried and true way of getting the crude wax from the press cake has been solvent extraction. Similarly, solvent extraction has been the accepted method of refining the crude wax. Hatt and his associates, however, took a different approach to the problem, came up with a three step refining process: demineralization with hydrochloric acid, vacuum distillation to get rid of the components of lower molecular weight, and a chromic acid bleach based on the I. G. Farbenindustrie method for bleaching montan wax.

Hatt says the process has been fully tested, would have been put to use in a commercial plant except for the fact that the finished product is capable of many modifications. He and his colleagues confidently look forward to a whole new series of waxes made by the process.

In any event, the Australians figure that they will have no more than 2,000 tons of crude wax available in a year; so they have based all their cost estimates on a plant of that size.

The first step, demineralization, takes 24 hours; it will be the time-limiting factor in plant design for the new process. Based on a working year of 250 days and a specific gravity of the wax of 0.84, the Australians would have to treat 1,070 gal. of wax per day. At an average mineral content of 5%, that would require 900 gal. of 3.3% hydrochloric acid.

After treatment with hydrochloric, the wax would be sent to the distillation unit, where the lower-molecular-weight components would be removed under 1 mm. pressure and 300 C. Special stainless steel would be needed to resist the fatty acids coming over at that temperature, and the receiver would have to be heated because the later fraction of the distillate melts at 60 C. Depending on the nature of the crude, 30% to 35% of the material would be removed in the process. To develop the required vacuum, the Australians suggest a four-stage steam ejector unit.

In the last stage, the remaining wax is bleached at 110 C with a mixture of chromic and sulfuric acids. It is then washed with boiling sulfuric acid (30% weight for volume) and with water. Next it is dried under low (200 mm.) vacuum and flaked if desired. A bleaching unit, including the electrolytic regeneration of the chromic acid, has been designed by I. G. Farbenindustrie. The Australians estimate an overall yield—from crude to refined product—of 50%.

Old Approach: Although the presence of wax in sugar cane was recognized over a hundred years ago,* it was not until 1916 that anyone put up a commercial plant. At that time one was built at Durban, Natal, Union of South Africa.

The Natal plant was in production for about ten years, reached its high point in 1924 when it turned out 6,000 tons. Several reasons have been advanced for the eventual closing of the plant. Probably it was a combination of many, but the biggest factor was its failure to make a wax of uniform quality.

Presently, the only sugar cane wax production of any commercial significance is in a Gramarcy (La.) plant jointly owned by S. C. Johnson and the Cuban-American Sugar Co. Warwick Wax Co. (Sun Chemical Corp.) is the exclusive sales agent for the product.

Crude wax is leached by a continuous vertical extractor from the wet press cake in Cuban sugar mills and shipped to Louisiana for refining. At Gramarcy, the crude wax is extracted with acetone at 90-100 C. About 18% of the crude wax—consisting of calcium and magnesium salts of the wax and resin acids—remains undissolved in the hot acetone and is separated out. The hot solution is then cooled to room temperature to crystallize the desirable wax fraction, leaving about 33% of the crude dis-

* In 1841, Avequin, a New Orleans apothecary, isolated the wax, dubbed it cerosin, suggested its use in candles.

solved in the solvent as a fatty oil.

The product is a hard wax with a sharp melting point and a color ranging from dark green to brown and tan. Yields from the process—about 50%—are comparable to those from the Australian process.

Search for Substitute: The Australians developed the new process because of the scarcity of organic solvents in Australia. They say that the process is "economical," but American experts take a dim view of the costs involved in substituting a vacuum distillation and a chromic acid bleach. It's a safe bet that wax produced from the process could not compete pricewise with the wax made by Johnson and Cuban-American.

Aside from cost considerations, the Australians claim their process has several advantages over the present one:

- Wax made by it is more flexible, can be modified to start a new series of waxes.
- The process is capable of taking crude from different mills, turning out a uniform wax product. In the past, inability to do that was a big stumbling block in the commercial exploitation of sugar cane wax.
- The process turns out a more attractive wax than the present one.
- By-products could be used as lubricants, greases, and—they hope—the basis for some pharmaceuticals.

Furthermore, the Australians report that an American firm is taking a hard look at the process with an eye toward building a plant ir this country. But if anyone is interested, it would be S. C. Johnson. And it is very doubtful that Johnson would be willing to shelve its equipment investment in Gramarcy for a process that would be more costly.

One Step Easier

You can throw away the books when you listen to Arthur Herbert of the Barium Development Corp. (New York). He has a process for making cheap barium nitrate which could be the starting point for a whole raft of industrial chemicals. But his process for making the cheap barium nitrate involves a reaction which the text books say "won't go."

Herbert realized that if he could get barium nitrate, he would have a versatile tool from which a whole line of commercially significant chemicals could be made. Potassium nitrate is just one of the compounds that Herbert could produce cheaply and easily from barium nitrate.

Present commercial production of potassium nitrate is by reaction of Chile saltpeter (sodium nitrate) with potassium chloride. The trouble with that, says Herbert, is that the product—potassium nitrate—and the by-product—sodium chloride—are both soluble salts and must be fractionated.

But if you react barium nitrate with potassium sulfate, you could get soluble potassium nitrate and insoluble barium sulfate. That would mean a separation by simple filtration.

Herbert's plans are by no means confined to potassium nitrate, however. He figures that from barium nitrate, it is possible to turn out over 40 industrial chemicals. He lists 9 barium compounds, adds that it is possible to make 37 other products. Furthermore he says that the plant layout would be such that no additional equipment would be required for producing the additional 37 chemicals. His comment: "You will perceive from this that the process has considerable flexibility."

ARTHUR HERBERT: Flexible process leaves experts skeptical.

Conversion Crux: Barium nitrate can be made commercially from the natural occurring ore, barytes (barium sulfate), by a thermal reduction to the soluble barium sulfide. The sulfide is treated with soda ash—forming the carbonate—and the carbonate treated with nitric acid to form the desired barium nitrate.

Herbert claims he can do the whole job in one easy step, by directly treating the barytes with soda ash. It's an established fact that powdered barytes can be boiled with a concentrated solution of soda ash to form barium carbonate, but reported conversions have not exceeded 10%. Herbert says that a 40% conversion would make the reaction commercially sound. And although he has based his cost estimates on a 50% conversion, he says that actually he has been able to attain 60% in the pilot plant. Because patents are still pending on the process, Herbert is not disposed to talk about his secret to the higher conversion.

Skepticism: Originally, the object of Herbert's Barium Development Corp. was to build a large plant to make chemicals by his process. He

Biggest Aluminum Plant

HENRY KAISER AND CHARLES E. WILSON pour the first ladle of aluminum from Kaiser Aluminum and Chemical's $150 million aluminum reduction plant in Chalmette, La. After the completion of eight giant potlines in 1953, the plant will be turning out 400 million lbs. of aluminum. That will make the Chalmette plant the biggest of its kind in the world.

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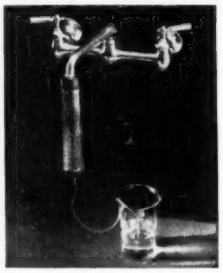

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PRODUCTION. . . . . .

says he has already sunk $20,000 in a Newark pilot plant (no longer operating) to test the process, is now content to find a buyer for the process.

The consensus among experts is that Herbert will have to have some positive proof that he can actually obtain his 40-60% conversion. Until he does, they will continue to put their faith in the established rules and text books which say the reaction is impractical.

EQUIPMENT. . .

PVC Pipe: Arrangements have been completed between H. N. Hartwell & Son (Boston) and Bolta Products (Lawrence, Mass.) whereby Hartwell will distribute Bolta's line of unplasticized polyvinyl chloride pipe and tubing, rods, sheets and molding compounds. Hartwell says it has set up a training school for fabricators, will offer complete engineering service. Distribution of the PVC equipment will be aimed at the chemical, rayon and other industries where corrosion is a problem. Bolta's products are based on Goodrich's Geon 404 vinyl resin.

•

Rubber-lined Valves: W. S. Rockwell (Fairfield, Conn.) is marketing rubber-lined butterfly valves for pipe sizes of 4 in. and up. The valves are intended to assure tight closure at high temperature and high pressure. For automatic operation, they are equipped with an air cylinder control mechanism. They can also be controlled manually.

•

Coat of Vinyl: On limited sale for a year, a Vinylite resin lining for steel drums has now been placed on the general market by Gates Engineering. Advantages claimed for the new lining: It will flex to the contour of a dented container, will not chip, peel or blister. It can be applied by brush or spray and will dry in 15 minutes at 250 F. Gates says the coating can also be applied to paper or fiber containers.

•

Gas Alarm: Johnson-Williams (Calif.) says that it has a new combustible gas alarm that is weather-proof, can be installed either in or out of doors. Standard signal is a red indicator light, but other signal units can be installed. The signal will flash at the point where the gas is being measured or at a distance.

•

Heating Tape: E. Machlett & Sons is selling a flexible and elastic heating tape. It comes in three forms: non-insulated (transparent), insulated on one side, or insulated on both. To heat, the tape is wrapped around the vessel. Machlett foresee its use in the laboratory or in the plant.

Glass Fibers for Industry

INFORMATION ON THE PRODUCTION OF paper made entirely from glass fibers (CIW, Mar. 31) has now been released by the National Bureau of Standards. Developed by the Bureau in cooperation with the Naval Research Laboratory, the glass fiber is resistant to heat, moisture, chemicals and micro-organisms. Because of its ability to remain unclogged for hours longer than conventional air filters, it is suggested for use in gas masks for industry and the military. Another likely use: as a high quality electrical insulator with a low power factor.

about chemical week

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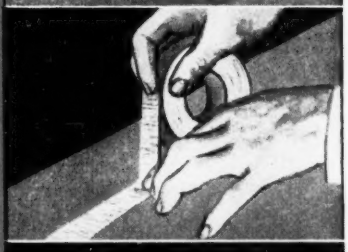

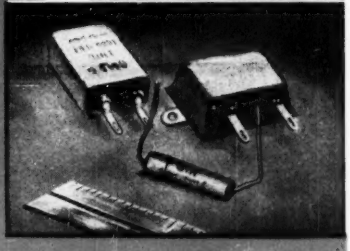

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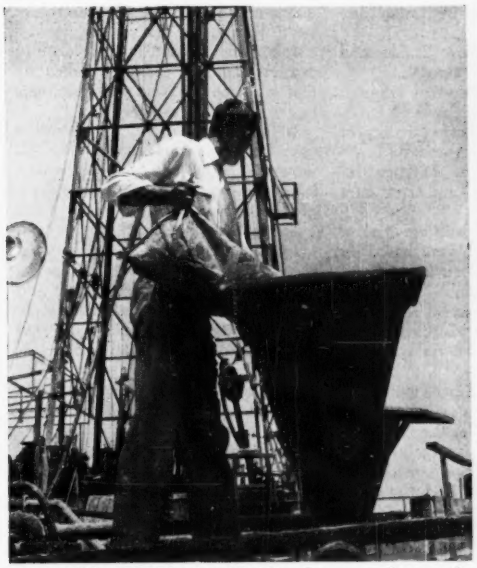
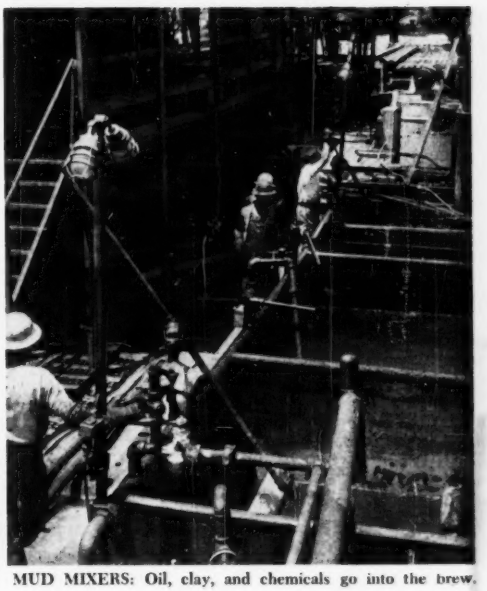


WEIGHTING MATERIALS: 100,000 sacks may not be enough.



MUD MIXERS: Oil, clay, and chemicals go into the brew.

Pedigreed Mud

$250 million and more is the oil well industry's 1951 bill for drilling muds, and the trend is up as more new wells are coming in.

It's a big market for chemicals: barium sulfate, lime, caustic soda, soda ash, sodium bicarbonate, salt, phosphates, and others are gobbled up at a tremendous rate.

When you're drilling an oil well with a giant bit grinding away some three or four miles down in the earth, getting the rock chips out is a helluva problem. That's where drilling mud comes in: Powerful pumps force the liquid mud down the hollow drill stem, out small holes in the bit, then back up to the surface between the outside of the drill pipe and the walls of the hole.

Drilling mud flushes out the hole and serves to lubricate the whirling bit. Plastering the sides of the well, it seals the porous strata, lessens the danger of cave-ins, and keeps water and gas out of the well cavity. The mud's very weight serves to counteract the pressure exerted by gas, oil, or water deep in the earth, thus prevents costly "blowouts."

That's why this year—a peak year for bringing in new wells—drilling mud companies have sold in excess of $250 million worth of mud. But this is no ordinary mud. It's mud with a pedigree, specially formulated at the rig for on-the-spot problems.

Pay Dirt: And it is not dirt cheap either. A single well may require a mud investment ranging from $800 to $100,000, depending on the depth and type of strata being drilled. Before bottom hole is reached, a new well can gobble up 100,000 sacks of barium sulfate (major weighting material used), mountains of chemicals and clays. Drilling costs may soar to more than $200 per ft.

Cutting the Pie: Biggest company and pioneer in the field, Baroid Sales Division of National Lead Co. (Houston) sells about 50% of the mud-making materials consumed by U.S. oil well drillers each year, while another Houston company, Magcobar (Magnet Cove Co.), accounts for some 40% of the business.

Companies like Milwhite Co. and Houston Oil Co. (Houston); Mud Control Laboratories, Indian Filling Co., and Tillman Drilling Co. (Oklahoma City); Oil Base Inc. (Compton, Calif.) and A. R. Maas Chemical Co. (South Gate, Calif.); Industrial Chemical Division, American Cyanamid (New York), and Philadelphia Quartz Co. (Philadelphia), split the other 10%.

Material-wise the industry is built around clay and water-based muds weighted with barium sulfate* (more than 650,000 tons used this year).

Baroid, Magcobar, and Houston Oil Field Materials Co. mine and process their own barite. The first two have mines side by side near Malvern, Ark., and Houston Oil Field Materials owns Arizona Barite Co. Milwhite and other firms in the industry buy barium sulfate from such suppliers as Missouri Barium Co.

Other materials going into muds are bentonite and other premium clays, which body the mass and lower water loss; polyphosphates, tannates, humic acid shales and lignosulfonates, used as thinners; pre-gelatinized starch, a thickener in salt water muds; crude oil and diesel oil for oil emulsion muds; cotton-seed hulls, cellophane flakes, sugar cane bagasse and mica, which prevent circulation loss through well walls; and a host of other additives including lime, caustic soda, soda ash, barium carbonate, and salt.

Dollar-wise, bentonite is by far the biggest seller of any of the mud-

* Drilling muds were in use at the turn of the century at Spindle Top near Beaumont, Texas, but is wasn't until 1926 that National Lead Co. utilized barium sulfate as a weighting material. Four years later, National Lead Co. organized its Baroid Sales Division to promote the new material in this field, had little competition for more than a decade. Then in 1941 patents expired, and Magcobar entered the field.

making materials—between 300,000 and 400,000 tons will be consumed this year—with barium sulfate placing second.

Oil Emulsions: Ordinary clay-water muds are probably the most popular types in use today, but recently oil emulsion muds have been arousing a great deal of industry interest. These muds are prepared by adding 8-20% crude or diesel oil and an emulsifying agent such as caustic soda to water-based muds.

Oil emulsion muds jump drilling speeds 10-200%, give a longer bit life, make holes more nearly true to gauge. Less torque is required to rotate the drilling pipe, less power is needed to circulate the mud itself. Patents on such products are held by Shell Oil, Esso Standard, Oil Base Mud, Inc., Baroid, and Magcobar. Claims made for them are that they facilitate boring of high directional holes and drilling of troublesome sloughing shale zones; also they help in recovering equipment lost in wells.

Unfortunately these muds are more expensive than older types, have a tendency to interfere with geological interpretation of well cuttings.

Service the Key: But even if this were not true, older types of mud formulations would still have their place. Using drilling muds properly is a complex task, and ability to choose the right mud mixture at the right time is just as important as having a wide variety of materials at hand. Each new well presents its own particular problems.

It is not surprising therefore, that mud industry success demands on-the-spot service. Expert information is needed right in the field, and to provide this, mud companies have specially trained engineers traveling about in laboratory-equipped cars to assist at the rig with here-and-now advice.

In 1951, when more than 44,000 wells were brought in, these men were kept hopping. Now, with oil needs on the upswing, 1952 should see them even busier, and mud sales greater.

Room for Growth

Du Pont's fifth annual survey of consumer and dealer attitudes toward aerosol products shows that although pressure-packaged specialties have won wide and favorable acceptance, the market is far from saturated.

This year Du Pont's Kinetic Chemicals Division had these objectives in checking on the relatively new industry that has become a continually expanding outlet for its Freon propellents:

1. To determine how dealers and consumers feel about aerosols.
2. To see how widely they are used by consumers, stocked by dealers.
3. To check purchasing habits of consumers, both urban and rural.
4. To reveal dislikes that may retard dealer stocking and consumer sales.
5. To uncover trends in the market.

The data tabulated were based on replies from 2,364 urban housewives, 530 rural households, and over 2,000 retail outlets in 42 states. The latter were based on personal interviews; the consumer opinions, on questionnaires.

Half the Battle: Since getting a product on the dealer's shelf is half a manufacturer's battle, the extent of dealer stocking (75% as against 70% in 1950) was encouraging. Although drug stores continue to lead as aerosol stockers (96% of drug stores asked stocked at least one aerosol product), groceries (56% of those asked stocked aerosols in 1951), variety stores (49%) and service stations (45%) continued their steady five-year gain. Department stores, which had been falling off (69% in 1950), showed the biggest gain (81%) this year.

It was evident that the older household products such as insecticides and room deodorants had much broader distribution among dealers, but that newer ones such as paints and lacquers and plastic sprays had rather poor distribution. The latter, for example, were stocked by only 13% of dealers handling aerosols, indicating that the potential among consumers has hardly been explored.

In the personal products field, rather poor coverage was shown. For although 96% of drug stores had at least one type of aerosol, only one product—shaving cream—was handled by more than 50%.

In general, dealers had a very favorable opinion of aerosols as a means of dispensing chemical specialties and cosmetics, thought aerosol sales were improving. Most of them also reported that their customers found no fault with aerosols. Significantly, in dealer reports on consumer objections, main objections to household products were: No. 1, too expensive; and No. 2, mechanical defects. Main objections to personal products, however, were in reverse order.

The Home Front: In 1951, aerosols registered their biggest gain among consumers, as 57% of urban and 58% of rural respondents reported buying one (in contrast to 1950's 47% for the urban group, the only one queried until this year).

There was an amazing similarity between urban and rural preferences for different kinds of products, Insecticides, as expected, rated first with both, 81% of all city-dwelling aerosol purchasers reporting they had bought them as contrasted with 88% for their country counterparts. Room deodorants were number two (34% for both rural and urban). Surprisingly, personal deodorants ranked third, but Kinetics doesn't think their actual production warrants this high position, believes there is some confusion with squeezable polyethylene dispensers.

A gradual trend toward greater consumer satisfaction with aerosols is clear, for while the percentage of satisfied urban customers has been constant (74%) for the past three years, those dissatisfied have been very low (3% this year). Rural respondents, reporting for the first time, were somewhat happier about aerosols as 81% said "completely satisfied", 15% said "partially satisfied"; 1%, "dissatisfield"; and 3% did not answer.

Different Story: Among respondents not expressing complete satisfaction, the reasons varied from those given by dealers. Consumers placed cost third, rated lack of effectiveness their main objection, with mechanical defects second.

Striking differences between place of purchase by urban and rural dwellers were apparent to guide marketing

Sticking to Work

MORE THAN FLIES were caught when 3,000 pounds of adhesive flooded Tanglefoot Flypaper's Grand Rapids, Mich., plant. Now employees are stuck with a clean-up job that may last 6 months.

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plans. Drug stores figured as the best outlet to reach city people, but country folk rated grocery stores their favorite place to buy aerosols.

Since aerosols are biggest in the insecticide field, their comparison with other types of insecticides (sprays, powders, etc.) is important. While they have made steady progress, moth balls, etc., and spray guns still outstrip them, indicating plenty of room for expansion of markets.

Likewise the home deodorant field showed up as another market where there is much selling to be done despite big inroads made in a short time. Wick type products still rate tops with both urban (88%) and rural (85%) buyers, while aerosols follow with 24% and 27% respectively.

Detailed reports on newer products such as paints, personal deodorants and shaving foams are also given in the survey, but they have not yet attained wide enough distribution to permit drawing many conclusions from the data.

•

Fungus Controller: A new-type fungus control compound has been developed by Donald F. Scott of the Inter-American Geodetic Survey, Balboa, C.Z. The formula consists of seven parts beeswax, two parts petroleum jelly, and one part of a poisonous mercury compound, and is applied hot to instruments and metal objects used in damp, humid climates where fungus control is a major problem.

•

Insecticide Plant: The Naco Fertilizer Co., Fort Pierce, Fla., has begun operation of a new insecticide plant.

•

Plant Expansion: Construction is in progress on a new building for the Wallace A. Erickson Co., Skokie, Ill., with completion scheduled for summer of 1952. The company manufactures pigments and acrylic polymers used in the dental field.

•

Monsanto Farm: Latest company to turn "farmer-chemist" is Monsanto. Its Organic Chemicals Division will establish an experimental farm in the St. Louis area to test agricultural chemicals, but has not yet selected the property. It will serve as a centralized testing area, does not mean discontinuation of similar work done at other locations.

•

Polyethylene Jar: A new jar of polyethylene is now available from the manufacturer, Injection Molding Co. (Kansas City, Mo.), in one-, two-, and four-oz. sizes and in any color, with heat-stamped labels of any design desired. Advantages of the plastic container are non-breakability, light weight, and double-wall construction, which prevents permeation.

•

Insecticide Expansion: The former Creager Manufacturing Co. plant in Denver is being transformed into a modern agricultural and household insecticide unit by Chemical Corp. of Colorado. The company will have double its capacity at completion of the work.

•

National Push: Hist-O-Plus, the APC-antihistamine combination for colds introduced last year in limited areas, will soon be marketed nationally. Its maker, Anahist Co. (Yonkers), claims it captured 20% of the antihistamine cold preparations market where it was test-sold.

•

New Sprayer: A new company, Farrens Chemical, has been set up by Farrens Tree Surgeons, Jacksonville, Fla., to do agricultural spraying in 11 Southeastern states. It has leased 5,000 sq. ft. of warehouse space at Imeson Airport, also Jacksonville, from which it will operate.

•

Strippable Coating: A strippable coating for Lucite, Plexiglas and other acrylics has been developed by Chemical Development Corp. (Danvers, Mass.) for use in place of masking tapes during cementing operations. Called CD Strip A, it is bright red and said to be fast-setting, easy to apply.

•

Expansion for Fuller: H. B. Fuller Co., Chicago industrial adhesives manufacturer, has leased a 14,400 sq. ft. building in Chicago to allow tripling of production, including a new line of products to be introduced in the Midwest.

•

New Insecticide Company: Southern Agricultural Chemicals, Inc., Kingstree, S. C., has been organized with capital stock of $50,000 to compound insecticides and fungicides.

•

New Ink Plant: A new $500,000 plant has just been opened by Bensing Bros. & Deeney, printing ink manufacturer, in Philadelphia.

•

Three in One: Pine Lustreclean is the trade name of a new industrial floor cleaner developed by West Disinfecting Co. (Long Island City, N.Y.), to perform three operations in one: clean, deodorize and lightly wax. It is a liquid formulation, diluted one cup to a gallon of water for use.

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REPORTED BY DISTRIBUTORS

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BOOKS . . . . . .

Federal Food, Drug, and Cosmetic Act, Judicial and Administrative Record, 1949-1950, by Vincent A. Kleinfeld and Charles W. Dunn. Commerce Clearing House, Inc., Chicago, Ill. 543 pp., $10.25.

This second volume in the Food Law Institute Series furnishes a record of administrative and judicial activities under the Federal Food, Drug, and Cosmetic Act of 1938 for the period covering May, 1949 to January 1951. Essentially, the book is divided into four main sections with the first part containing digests of all opinions rendered under the 1938 Act with specific references to the various subsections of the Act in point. Administrative views are expressed in the second section, which outlines general policy and interpretation. Definitions and standards for food make up the third portion. The last major section is intended as a guide for furnishing leads to pertinent material, when any problem should arise under any section of the Act. Included also is a cumulative table of cases which covers judicial opinions for both this volume and its predecessor.

Paint and Varnish Production Manual, edited by Verne C. Bidlack and Edgar W. Fasig. John Wiley & Sons, Inc. New York, N.Y.; 288 pp., $6.50.

Assembling basic facts involving production facilities and methods employed by the paint industry, this volume was written with the purpose of educating management and production personnel concerned with the manufacture of surface coatings. Phases of the industry treated here include physical facilities, engineering fundamentals as involved in the proper use of equipment and the processing of materials, the problem of personnel and associated aspects, and factors of cost to be considered. Sponsored by the Federation of Paint and Varnish Production Clubs, this manual attempts to indicate new trends and developments in the field, with reference to various changes in materials and methods which have correspondingly affected the application of engineering principles.

Chemical Trade Names and Commercial Synonyms, by Williams Haynes. D. Van Nostrand Co., Inc., New York, N.Y.; 279 pp., $5.50.

As a dictionary of trade terms, this volume gives for each trade name its chemical composition, indicative uses, and source. The book confines itself to the chemicals and chemical specialties sold in the industrial field. Specialty products used in the textile, metallurgical, paint and varnish, perfume and other industries are included; whereas other specialties, that are not sold to manufacturers for their own productive operations, are excluded. This book identifies 20,000 special names in modern chemical usage in addition to explaining alphabetical and numerical abbreviations such as 2,4,5-T and DDT. An index of manufacturers appears at the beginning of the volume.

Advanced Engineering Mathematics, by C. R. Wylie, Jr. McGraw-Hill Book Co., New York, N.Y.; xiii+640 pp., $7.50.

The title of this volume is intended to indicate those branches of mathematics which an applied science or engineering student would normally study the first year or two after having completed introductory calculus. Mathematical topics discussed and explained here include differential equations (with emphasis on linear equations with constant coefficients), Fourier series, operational calculus (developed through the use of the Laplace transform), separable partial differential equations, vector analysis, and numerical methods. Throughout the volume emphasis is placed on the interrelationship of the various topics, and at the same time their relationship to the general problems of an engineer.

MEETINGS . .

Amer. Assn. for the Advancement of Science, annual meeting, Philadelphia, Pa., December 26-31.

Div. of Ind. and Engineering Chemistry, annual symposium, Evanston, Ill., December 27-28.

Northeastern Weed Control Conf., annual meeting, New Yorker Hotel, New York, N. Y., January 2-4, 1952.

Natl. Constructors Assn., annual meeting, Waldorf-Astoria Hotel, New York, N. Y., January 8-10, 1952.

Manufacturing Chemists' Assn., inter-industry conf. on chemicals in foods, Statler Hotel, New York, N. Y., January 15, 1952.

Soc. of Plastics Engrs., national technical conf., Edgewater Beach Hotel, Chicago, Ill., January 16-18, 1952.

Drug, Chemical & Allied Trades section of New York Board of Trade, mid-winter luncheon meeting, Astor Hotel, New York, January 17, 1952.

Compressed Gas Assn. Inc., annual meeting, Waldorf-Astoria Hotel, New York, N. Y., January 21-22, 1952.

Our Defense Program Faces a Crisis

A major crisis will soon confront our defense program.

It is not a crisis in raw materials. To find enough materials, from steel to cobalt, for defense production is a serious problem. But it is one that is being solved.

It is not a crisis in manpower. Shortages of workers with special skills hamper production, but these shortages are being relieved, slowly.

It is not a crisis in manufacturing capacity. American industry's record-breaking expansion is, with very few exceptions, keeping abreast of defense needs.

The coming crisis will be one of finance. It will rise from our failure to provide the means to PAY FOR the defense program we now have under way.

A $15 Billion Deficit?

Congress has approved a defense program which is scheduled to raise *total* federal spending in the year from June, 1952, to June, 1953, to somewhere between $85 and $90 billion. Additional appropriations for more air power and atomic development, which are now proposed, would add several billion dollars.

But Congress has not approved a tax plan to match such spending. With the new levies enacted in this session, tax collections during the 1952-53 fiscal year are estimated to fall somewhere between $70 and $75 billion. That would be roughly $15 billion short of balancing the budget. If the defense program is expanded, the deficit will be that much greater.

We have not yet felt the impact of the crisis that would accompany a federal deficit of this magnitude. Federal tax collections currently are big enough to balance federal expenditures. But the defense program is scheduled to boost the annual rate of federal expenditures $25 billion in the next year.

To Meet the Crisis

By January the crisis will be clearly in sight.

Then the President will present his budget. After that, Congress must act to close the broad gap between government income and government spending. If it fails to do that, the whole defense program will be menaced by weakness in its financial foundations. That weakness might well take the form of another destructive wave of inflation.

We have three ways to meet this crisis.

The best approach, of course, is to cut unessential expenditures. That can make a real dent in the deficit. The second is to collect more

taxes. The third, and by all odds the most dangerous, is to have the federal government meet its deficit by going deeper into debt. Borrowing, which might feed inflation, can easily lead to disaster.

Near Income Tax Limits

It will not be possible to raise taxes to meet the deficit merely by increasing further the rates on corporations and on persons in the upper income brackets. Congress has about scraped the bottom of that barrel.

The Senate Finance Committee said as much in reporting this year's tax bill. The Committee reported that it had "serious doubts as to the feasibility of raising any substantial additional amounts of revenue from income tax sources." The Committee observed that recent tax legislation brings the burdens of most corporate and individual income taxpayers close to the World War II peaks, and actually carries the rates paid by many taxpayers above those peaks.

Our ramshackle federal tax system must be thoroughly overhauled in order to broaden the tax base if it is to produce more revenue—without doing much more harm than good.

The shocking fact is that no one seems ready to act along any line that might enable us to surmount the crisis.

That fact of itself aggravates the coming crisis. And next year's presidential election doesn't make it any easier to move effectively. Both parties will shrink even more than normally from backing any program that might irritate any considerable number of voters.

If we are to meet this crisis on the tax front in an orderly way, the technical work should be in progress right now. To a large extent it is being ignored.

If we are to enforce the vitally essential program of government economy, there is the same urgent need to get under way the spade work that is required.

And if—as a last miserable expedient—we decide to let the federal government drift deeper into debt, it must have a well-developed program of borrowing from individuals and other investors, such as insurance companies, rather than from the commercial banks. Borrowing from commercial banks might speedily translate the deficit into more and more price inflation. No adequate program of borrowing from savings is now in sight.

Now Is the Time

It is possible, of course, that international relations may improve sufficiently to make it safe for us to slow down the rearmament program. If that should happen, the fiscal crisis would not be so critical. But that kind of good fortune has been notably absent in recent years.

Lenin, patron saint of Communism, is quoted to the effect that to destroy a political and social system such as ours "you must debauch its money."

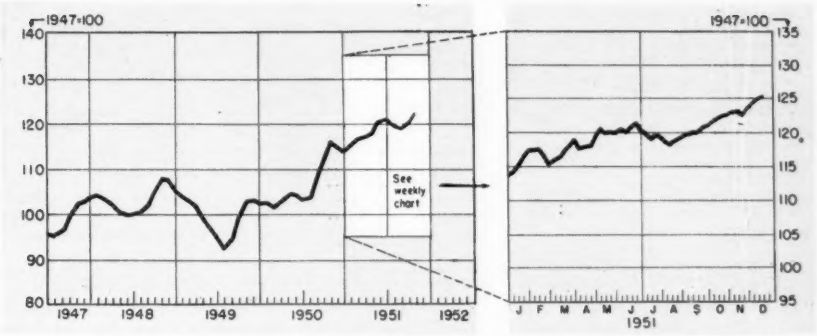
We shall set democracy to digging its own grave if, through our preoccupation with politics during the presidential campaign, we pave the way for further debauchery of our money.

If we really want to avert that disaster, now is the time for us to get going.

Once the crisis is full upon us, it will be too late.

McGraw-Hill Publishing Company, Inc.

MARKETS . . . . . .



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries

Those in the market for chemicals this week will find most of them readily available. Supplies continue to improve as output rises and demand doesn't. If this trend lasts much longer, producers will face the alternatives of widening their markets or of cutting back on production.

As supplies flow freer, complaints against Government controls will become more frequent and louder. Producers feel that the more ample supplies, the less need for materials allocations, price ceilings, and export controls.

One producer this week put the blame for lagging chemical sales upon the restrictions on credit and building. For instance, home building is vital to chemicals used in plywood adhesives, surface coatings, and building materials.

Equally important, when the homes stay unbuilt, the market for finished civilian goods falls off, and with it, chemical sales volume.

Allocations for defense needs sometimes end up with the civilian market left out, while the military seemingly can't decide how much to buy or when. But in the division of polyethylene supplies, civilian customers will get a break. NPA will give them more, and the military less, during December and January.

Even so, the military now takes one third of the total output, with equal shares going to industrial consumers and to the unrestricted "free market." February may see a temporary supply pinch as one producer shuts down to put in some new equipment, but by the end of March, this deficit should be made up.

After that, supplies should become more ample. Civilian industry in 1952 will take a larger share of a larger output. The film buyer's outlook is further brightened by the current easy supply of acetates and vinyls.

How to price plasticizers has producers more than slightly baffled. Since filing under CPR-22, some have ended up with higher prices, some with lower, on the same commodity. Now producers are trying to have OPS end the confusion by setting up a uniform dollars-and-cents ceiling.

Relief is not obtainable under the Johnston formula which uses a profit standard based on the 1946-1949 period. Reason: Most of the producers were not making most of these plasticizers then.

MARKET LETTER

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947=100)	124.9	125.0	114.5
Bituminous Coal Production (Daily Average, 1000 Tons)	1,865.0	2,024.0	1,929.0
Steel Ingot Production (Thousand Tons)	2,097.0	2,081.0	1,944.0
Wholesale Prices—Chemicals & Allied Products (1926=100)	140.4	139.4	138.3
Stock Price Index of 14 Chemical Companies (Standard & Poor's Corp.)	240.8	235.5	201.3
Chemical Process Industries Construction Awards	$10,553,000	$70,881,000	$19,721,000

MONTHLY BUSINESS INDICATORS—HOURLY WAGES	Latest Month	Preceding Month	Year Ago
Chemicals & Allied Products	$1.630	$1.640	$1.537
Products of Petroleum & Coal	1.996	2.005	1.868
Paper & Allied Products	1.535	1.528	1.438
Rubber Products	1.710	1.716	1.582
Textile Mill Products	1.328	1.325	1.295
Leather & Leather Products	1.291	1.281	1.218

Shrinking profits on plasticizers are making producers look askance at high costs of raw materials. For these have climbed faster in most cases than the prices of plasticizers made from them. It is unlikely that demand for increased output can be met while this price squeeze continues.

Sebacates for low temperature plasticizers are urgently needed. But costs of their raw material, castor oil—most of which is imported—climbed too high before controls were imposed.

Evidence continues to pile up that the insecticide export market will take a permanent—and sizable—share of U.S. production, especially of DDT and BHC. Output already exceeds the amount the domestic market has normally taken, and producers are urging the Office of International Trade to liberalize exports, especially in the current off season.

U.S. output of DDT is better than 105 million pounds yearly, while domestic demand for the approaching season is rated at 85 million pounds. If OIT heeds producers' pleas, the 20 million pound differential will go abroad to help meet the export demand of some 35 million pounds. The only foreseeable alternatives to more abundant exports are a cutback in output or a glut on the domestic market, especially if the weather kills off the bugs first.

But the U.S. Department of Agriculture admonishes the farmer to play safe and buy insecticides early this season. For if higher exports are permitted, and pests happen to run rampant, far-off stocks won't be much help.

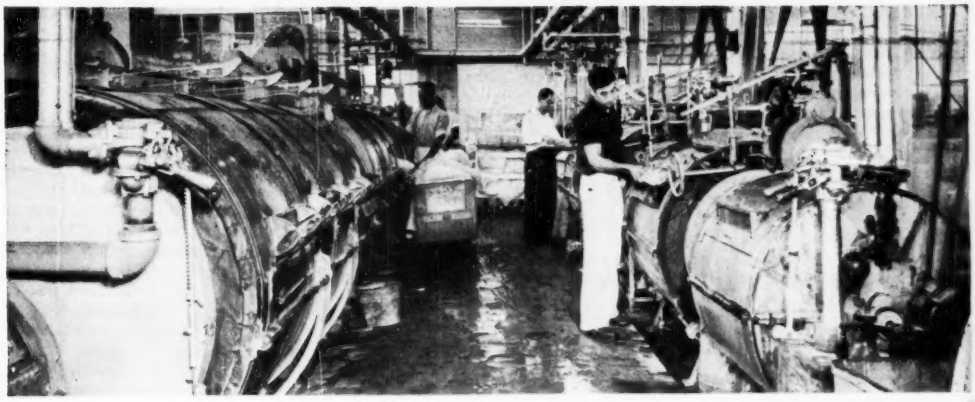
Buying ahead is the only way to even come close on such short pesticides as copper sulfate and sulfur. The export market will have to get by on skimpy rations on these. OIT, however, will permit limited amounts of licensed overseas shipments for the heavy demand abroad. To insure fair distribution, OIT requires that the end-use be essential, and that the customer have a previous buying record on these items.

Quaker Oats' new 40 million pound-a-year furfural plant at Omaha will swell the U.S. total to around 100 million pounds, and help relieve the year-old shortage. When the order backlog is whittled down, some new furfural uses are slated to burgeon. Marked for early rise: removing sulfur from cat cracking feed stocks, a process developed by the Texas Co.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending December 17, 1951

	Change	New Price		Change	New Price
UP					
Cyclohexanol	$ .005	$ .365	Linseed oil, raw	$ .005	$ .21
DOWN					
Caprylic acid, 90%	.02	.355	Carnauba wax, No. 1, yel.	.02	1.22
Casein, Dom. stand.	.01	.35	Shellac, superfine	.015	.49

All prices per pound unless quantity is stated



ONE OXALIC USE: Too small to stop a slump.

Easing for Oxalic

Oxalic acid is easier than at any time since Korea, as textile and tanning declines curb use.

Automotive radiator cleaners are now about one-third of the market. Their potential is large, and steady growth is a good bet.

Raw materials for oxalic will pose no problem as more formates will be available, and citric fermentation will help too.

The answer to the oxalic acid market problem will be found in the 40 million vehicles that ply the nation's highways. If more motorists take to oxalic as the way to keep their radiators rust-free, then producers should have no qualms about boosting output. If not, a surplus is in sight.

The question has come in to sharp focus during the past few months, for during that time, supplies of oxalic acid have eased considerably. Until this summer though, it was hard to get, and enjoyed a lively resale business.

Judging by the past, the pendulum of oxalic availability has made some wide swings from long to short and back. One reason: Demand for oxalic has been seasonal. For instance, textile and leather processing, among the larger uses, are noted for ups-and-downs. Lately, even the ups have looked more like downs.

Cool Water: Oxalic makers and sellers must accordingly look to the fastest growing market to meet this letdown. Dissolving rust out of cooling systems currently takes about one-third of the oxalic output of 20-25 million pounds per year. This use is still relatively new (some 10 years), and auto specialty sales managers are somewhat dazzled by the prospects of future growth.

In mapping sales targets, each car owner is regarded as a potential customer for at least one pound of radiator cleaner yearly. On this basis, some 40 million pounds—more than the entire current production—could go into this use alone. The picture would be even rosier if the motorist could be educated to purge the cooling system twice a year—once in the fall when the anti-freeze goes in and again in the spring.

Privately, though, the average sales manager is happy to settle for steady progress, if only to keep output on an even keel. For he knows the motorist doesn't change buying habits overnight. One factor that may put a brake on oxalic growth is the widening use of rust inhibitors. For these would prevent the rust that the oxalic was supposed to remove later. As the market develops, the more-cautious motorist will rely mostly on the inhibitor, and the nonchalant type will wait until he sees the rust.

And Many Now: At the present time, however, the radiator market is figured at around eight million pounds a year. Larger amount normally have gone into textile and leather processing, but these outlets have been in the doldrums. Oxalic also goes into dyes and these, of course, closely follow the textile and leather business. The result has been to underscore the traditional feast-or-famine nature of oxalic sales.

But numerous other uses of oxalic have been developing to smooth out these fluctuations. These are still small but growing. Manufacture of oxalates for blueprints is on the upswing, as are uses of oxalic as an intermediate in fine chemicals and as a polymerization catalyst. A newcomer among oxalic outlets is in the purification of pentaerythritol. This application now takes about 3% of the oxalic made, but the rapid growth of PE is slated to boost this particular need.

In The Making: These growth prospects are eyed with interest by the makers of oxalic acid, as well as by those who think the market looks tempting. With the current easing in demand, the immediate prospects are not encouraging for a new hopeful.

Supplies will be further improved by the upsurge in citric acid production, in which oxalic acid is a readily controllable by-product. Chas. Pfizer, Miles Laboratories and Stauffer Chemical will all be adding to the by-product oxalic total next year.

But by far the majority of oxalic will continue to come from formates. This is the source of the two major producers at this time—General Chemical and Victor Chemical. Formates are generally made from the reaction of caustic and carbon monoxide, but increasing quantities are now available as a co-product in pentaerythritol manufacture.

What happens to this new source of formate will be closely followed by the industry for the answer to this poser: Will the PE makers get into the oxalic business, or will they sell formic acid and formates?

Antimony Is Ample

Despite last month's rise in antimony metal ceiling prices, manufacturers as yet are undecided whether or not to up prices of antimony salts. Reason: good supplies and competition.

The Office of Price Stabilization pegged ceilings on antimony at 49½-50½¢ per pound for different grades, f.o.b. shipping point; in addition, the agency set carload prices for antimony oxide in bags at 48¢, delivered; and sodium antimonate at 43¢, freight prepaid. In general, these tailored prices are above manufacturers' GCPR allowances.

Despite the higher ceilings allowed for the compounds, many manufacturers have kept prices at their old levels. Some oxide producers are selling at 44½¢ and others at the new ceiling. Producers of the antimonate are content, the way things are, to receive 40.5¢ per pound.

Prices of the two other principal—by volume—antimony derivatives, the sulfide and trichloride, have remained at their previous levels.

The World Over: Producer price reluctance reflects ample world supply. Formerly the metal was scarce and foreign smelters sold their output at 60¢ per pound, considerably above the former domestic ceiling (GCPR) of about 42¢. Less speculation has brought a global decline in ore, metal and salt prices, narrowing the differential.

Production of antimony has been encouraged by U.S. mobilization officials. The Defense Minerals Procurement Agency has set up an industry advisory committee to raise output and maintain it at a level high enough to meet sharply increased defense and civilian needs. But though production has been rising, demand, as of right now, hasn't kept up.

DMPA, in promoting expansion, has in mind needs for antimony in both military and industrial fields. As a metal, it goes into batteries, bearings and type metal; non-metallic uses (mainly the oxide) are as a pigment in ceramics, ceramic enamels and as a textile flameproofing agent. During World War II, close to 30% of all antimony produced ended up in flameproofing substances; but in peacetime, battery metal and ceramics have been the biggest markets.

Undoubtedly, as the mobilization program continues, demands for antimony metal (in batteries) and oxide (for flameproofing) will increase. It's likely that needs for flameproofing will equal or exceed the 7,600 ton consumption in 1945.

As this demand increases, the material will be continually harder to obtain, but this week, on a short term basis, supplies are plentiful.

Carbide for Carbide

Shortage of acetylene gas has caused an upturn in importation of calcium carbide, one raw material for the gas.

In Louisville, Ky., for example, National Carbide Division of Air Reduction is buying almost as much carbide as it is producing, so it can generate enough acetylene to meet demands from DuPont and Goodrich. DuPont uses it in production of neoprene; Goodrich, in making vinyl monomers.

These users need the acetylene from 800 tons of carbide per day. Of this, about 420 tons is manufactued in Louisville; the rest comes from other scources in the U.S. and Canada and from overseas producers. Some of this 380 tons is purchased by DuPont, though National Carbide produces the gas.

Demand for acetylene in Louisville is only one indication of the overall shortage. Production of polymers dependent on acetylene as a basic raw material has increased. New uses for the gas have also upped demand.

Expansion now in the works is increasing domestic carbide capacity, but difficulties in getting equipment and electric power mean that a self-sufficiency probably won't be reached before 1953 *(CW, Sept.1)*.

GOVERNMENT NEEDS

Bid Closing	Invitation No.	Quanity	Item
Regional Information Officer, Region 3, General Services Administration, Washington 25, D.C.:			
Dec. 27	2M-5167-R	14,300 gal	Soap liquid, toilet 55 gal. drum
		65,750 lb	Soap powder, approx. 250 lb bl
		40,600 lb	Soap toilet powdered for dispensing machines
Commanding General, New York Quartermaster Procurement Agency, 111 East 16th Street, New York, N.Y.:			
Dec. 28	52-652B	1,139,000 cks	Soap, toilet, floating, white, 2 oz. cake
Dec. 26	52-651B	50,515 gl	Adhesive, water resistant, case-liner, type 1-5 gal. can
Dec. 27	52-642B	119,973 cn	Powder, scouring, floor, 1 lb. can
Jan. 3, 1952	52-655B	39,216 cont	Disinfectant, latrine bucket
Armed Services Medical Procurement Agency, 84 Sands St., Brooklyn, N.Y.:			
Dec. 26	1646-Q	959,040 tubes	Drugs and chemicals
Dec. 27	809-B	25,008 ea.	Drugs and chemicals
Dec. 28	9954-B	1,501 quarts	Chloride indicator
Jan. 1	9933-B	37,500 lbs.	Insecticide, diluted powder
		100,000 lbs.	Naphthalene-technical flakes
Dallas Chemical Procurement District, Dallas, Tex.:			
Jan. 3	41-050-52-17	488,860 lbs.	Aluminum powder, grade I, CML-MC-DL-16-12
New York Chemical Procurement District, 111 E. 16 St., New York, N.Y.:			
Jan. 9	CML-30-070-52-32	24,205 gal.	Cresylic acid, commercial grade

GOVERNMENT AWARDS

Item	Supplier	Location
U.S. Navy Purchasing Office, 180 New Montgomery Street, San Francisco 5, Cal.:		
Acid, phosphoric	Cole Labs., Inc.	Long Island City 1, N.Y.
Chemical Corps., U.S. Army, New York Chemical Procurement District, 111 E. 16th St., New York, N.Y.:		
Sodium Bichromate, granular	Mutual Chem. Co. of America	New York, N.Y.
Zinc Oxide, Grade 2, Class A	Eagle-Picher Sales Co.	Cincinnati, Ohio
Armed Services Medical Procurement Agency, 84 Sands St., Brooklyn 1, N.Y.:		
Glycerin	Vegetable Oil Prod. Co.	Los Angeles, Calif.
Sulfadiazine Tablets	Physicians Drug & Sup. Co.	Philadelphia, Pa.
Streptomycin	E. R. Squibb & Sons	New York, N.Y.
Streptomycin	Chas. Pfizer & Co., Inc.	Brooklyn, N.Y.
Aureomycin, hydrochloride	Lederle Lab. Div. Amer. Cyanamid Co.	New York, N.Y.
Penicillin G Potassium Crystalline tablets	Abbott Labs.	Chicago, Ill.
Procain Penicillin G Crystalline in oil	Eli Lilly & Co.	Indianapolis, Ind.
Dimenhydrinate tablets	G. D. Searle & Co.	Chicago, Ill.
Acetophenetidin, acetylsalicylic acid & caffeine tablets	The Norwich Pharmacal Co.	Norwich, N.Y.
Acetylsalicylic acid tablets	Plough, Inc.	Memphis, Tenn.

PICTURES IN THIS ISSUE:

Cover (top) & p. 19—Russell C. Aikins; p. 11—McGraw-Hill World News Photo; p. 20—Wide World; p. 23—U.S. Department of Agriculture; p. 26—Natl. Bureau of Standards; p. 30—Wide World.

SEARCHLIGHT SECTION

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NEW ADVERTISEMENTS received by 10 A.M. December 26th at the New York Office, 330 W. 42nd St., New York 36, N. Y., will appear in the January 5th issue subject to limitations of space available

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4—Vertical bolted steel tanks: (3) 5275 gal. (1) 3870 gal. (Now outdoors, unbolting not required).
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1—Vertical welded steel bin, ¼" and 3/16", has two vertical sections each 942 cu ft. total 1884 cu ft. (Will be cut for removal).
1—Richardson Automatic Dump Scale, "FF", 2 bu. cap., with feed and dumo hoppers.
1—Burmeister 32" x 80" galv. metal grain cleaner.
1—Hehle 2-roller mill, 9" x 22" rolls.
1—Barnard & Leas 3-pair high roller mill, 9" x 18" rolls, 10 HP motor
1—Ingersoll Rand Bronze Centrifugal Motorpump #2-MRV-20, 175 GPM @ 260'. 20 HP motor.
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P-12A

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THE NUMBERS

Advertisements:—There is a page number on the coupon for each advertisement. Before the number, may appear, L, R, T, B (left, right, top, bottom), locating the ad on the page; small letters following (a,b,c) indicate additional products in the advertisement.

Editorial Items:—Numerals are page numbers; the ABC's distinguish among items where more than one is on a page. There is a number on the coupon for each item referring to new products, equipment, and literature.

EDITORIAL ITEMS

For more data, circle number on coupon.

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For more data, circle number on coupon.

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COMPANY _____

ADDRESS _____

CITY & STATE _____

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Expires March 22, 1952

BOOKLETS . . . .

Chemicals

Plasticizers

10-p. catalog giving the specifications, formulas, physical properties and recommended uses for the firm's most important plasticizers. A two-page reference table affords comparison of the physical properties and compatibility characteristics of the various plasticizers. Hardesty Chemical Co., Inc.

Alkyd Resins and Hard Gums

Technical catalog covering physical characteristics, uses, and other data on the firm's line of alkyd resins and hard gums, which find application in the paint, varnish, lacquer, printing ink and paper coating industries; certain formulations are also included and particular note is made of government specialty items. Alkydol Laboratories, Inc.

Mixed Pigment House Paints

16-p booklet entitled "White Lead in Mixed Pigment House Paints," discussing the physical and chemical properties, advantages, reactivity, appearance and formulation of white lead, in the light of its use in house paints as a stabilizer, plasticizer, strengthener, water resistor and as an agent for improving appearance. A supplemental technical bulletin contains five primer and eight finish paint formulations, including a variety of mixed pigment formula types to meet diverse geographical and marketing requirements. Lead Industries Association.

Vinyltrichlor and Vinyltriethoxy Silanes

4-p. technical data sheet giving information on the physical properties, typical reactions, applications, and availability of both vinyltrichlorosilane and vinyltriethoxysilane, indicating their potential significance in protective coatings, plastics, textiles, elastomers and chemicals, owing to their unique characteristic of dual reactivity. Linde Air Products Co.

Chemical Products

Product list noting the firm's products, products which fall in the fields of food technology, agriculture, ore beneficiation, leather, textile, paper, pharmaceuticals and industrial applications involving surface-active chemicals. Emulsol Corp.

Equipment

Roller Mills, Kneaders and Mixers

15-p. catalog of the firm's mixing and grinding equipment, features high-speed three-roller mills used in the production of inks, enamels, soap, drugs, cosmetics and any similar paste materials where uniform dispersion is desired. Other equipment covered here as to construction and operation details, specifications and uses include double arm kneading machines, mixers of various types, speed motors, motor drives, etc. Charles Ross & Son Co.

Lead-Calcium Alloy

4-p. reprint of article entitled, "Lead-Calcium for Storage Batteries," written by U. B. Thomas, Jr., reports on experiments leading to the development of lead-calcium as a new alloy for battery-plate grids. Gould-National Batteries, Inc.

Filter Gauges

4-p. bulletin describing the construction, operating principles, and installation of various models of filter gauges—gauges used for indicating and/or recording rate of flow, loss of head, and water level for filter plant. Builders-Providence, Inc.

Laboratory Apparatus

16-p. booklet, 14th edition of firm's "What's New" bulletins describes and pictures new products for the laboratory; included in this issue are electric pipette washer and dryer, angle head centrifuge, flexible manometer, precision balance, and Teflon-coated ground glass joints. Scientific Glass Apparatus Co., Inc.

Induction Frequency Converters

4-p. folder covering the fundamentals, operation and construction features of induction frequency converters, high-frequency power supply apparatus; included also are tables of ratings and frame sizes. General Electric Co.

Pumps

6-p. folder discussing and diagramming the construction features and standard pedestal arrangements for firm's grease-lubricated general purpose pumps which can be had in capacities to 2,500 gal. per minute at heads to 550 ft. Allis-Chalmers Mfg. Co.

Diaphragm Motor Valve

Specification sheet furnishing data on size, construction, body pressure range, connections and mounting dimensions of the firm's series of diaphragm motor valves designed to provide optimum narrow-band proportional control. Minneapolis-Honeywell Regulator Co.

Flooring Material

Bulletin giving technical data, application hints and maintenance suggestions for using "Flinthard," a flooring repair and resurfacing material claimed to be stronger than concrete and resistant to oil, grease, acids and moisture. Paramount Industrial Products Co.

Steam Cleaner

4-p. bulletin describing firm's steam cleaner line as to advantages, uses, and performance; and pointing out the different applications of the steam vapor and heavy-duty models. Specifications are listed in chart form so that pressures, capacities and temperatures of various models may be compared. Malsbary Mfg. Co.

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St. Louis 8 ..... 3615 Olive St., Continental Bldg.

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4 _____

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